AMERICAN

JOURNAL OF MINING,

Milling, Oil Boring, Geology, Mineralogy, Metallurgy, etc.

WESTERN & COMPANY, EDITORS AND PROPRIETORS.

PARK BUILDING.

VOLUME III.—MARCH, 1867, TO JUNE, 1867.

NEW YORK:

37 PARK ROW AND 145 NASSAU STREET.

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INDEX TO VOLUME III.

Editorials.

America, the Resources of—Her Metallic Wealth—Necessity of a Faithful Exponent of her Mineral Interests—How the JOURNAL OF MINING supplies this Want, 10; Andes, Expedition to, 130.

Back Numbers, 10, 30; Browne, Mr. Ross, Logical and Able Defence (?) of—His Reliable "Facts and Figures," 150; Brewing, 190.

Colliery Explosions, Fatal—Culpable Negligence, 50; Chinese Difficulty in California, the—Are the Coolies a Useless Burthen? 70; Colorado, Navigation of the, 90; Canada, Gold Excitement in, 150; Copper Mines in Cuba, 170; California, Prosperity of. How to Employ its Superfluous Capital, 210.

Explanation, 10; Earthquakes—their cause and effect, 110; Exhibitions, facts about, 130.

Indian Barbarities, 90; Immigration and Emigration, 70; Immigration, Statistics of—The Tide of Men still flowing—Employment and Reward for all, 70.

Luminous, 50.

Mining, the Value of, 30; Miners' Mutual Relief Association, 30; Miners, the Strikes among—Words of Advice—The Council of the Prud'hommes in France, 50; Mines of Columbia College, The School of, 50; Mint Laws, Necessity of a Change in the—Evils of the Existing Code, 70; Mines, Accidents in—Miners' Tax in Colorado—Who Received the Money, 110; Missouri, Mineral Wealth of, 190; More Light, 190; Montana, Indian War in, 190; Mexico, its Mines and Railways, 270.

Isthmus of Panama and English Intrigues, 270.

Nitro-glycerin, 110; Needful Reform—Proposed International System of Weights and Measures, 210.

"Operations" in Mining Stocks—Over-issue of Shares, 130.

Pacific Railroad, The—To the Great West, 30; Progress of the West—The Union Pacific Railroad, 230; Petroleum, and some of its Future Uses—

Russian America, to the United States, Cession of, 30; Russo-American Telegraph Project, Failure of, 70; Russian America, The Minerals of, 170; "Representation" of our Mineral Wealth at the Paris Exhibition, 250.

Subscribers, to our, 10, 250, Scientific American vs. Senator Sumner—A Word to the Wise, 230.

Territory, Our New, 50.

Worthy and Well Qualified, 250.

Scientific Meetings.

AMERICAN INSTITUTE, POLYTECHNIC BRANCH.—Manufactures of Natrona, "Dressing" Mill Stones, Bishop's Electric Telegraph, Glaciers, Mariner's Compass and Thermo Electricity, 11; The Hicks Steam Boiler, Important Statement Correcting the Record of the History of Photography, New Flax-Pulling Machine, The Pantograph, Van der Weyde on the Connection Between Light and Sound, 31; Corrugated Iron, A New Screw for Propellers, Incrustation, A Question of Order, Molecular Force, 51; Improved Hygrometer, Automatic Water Meter, Defence of American Ingenuity, Analysis of Substances Akin to Petroleum, 71; Survey of Central Asia, The Eozoon Canadense, Impurities of Water in Winter, City Railroads, The Revolving Electrophorus, 91; Anemometer, Spirometer, Glass Protected Against Hydrofluoric Acid, Carburetted Coal Gas, Vibrations of Solids, Cure of Hydrophobia and Tetanus, Deodorized India Rubber, Use of the Microscope, Anti-Incrustator, 110; Scientific Items, Life-Saving Raft, Sharpening Mowing Knives, Improved Picture Frames, Galvanic Intensity and Quantity, Nova Scotian Gypsum, 130; Scientific Items, Tellurium, Steam Ploughs, Gypsum as a Fertilizer, 150; Fish in Artesian Wells, The Spots on the Sun, The Cause of Cholera, Chinese Canal Locks, Strength of Block-Tin Lead Encased Pipes, 170; Vanadium, A New Volcano, Mountain Railways, Meerschaum, Electric Light for Ships, Water Meters and Lead Pipes, Is Tellurium a Metal? 190; Scientific Items, Rubber Tubing, A Bunsen Burner, A Petroloid as a Congealer, Wooden Pavements, Lead Poisoning, A Well Merited Compliment, 211.

CALIFORNIA ACADEMY OF SCIENCE.

California Petroleum, Coal from Mount Diablo, Salt Beds in Arizona, The Snow Plant, 131.

GERMAN POLYTECHNIC ASSOCIATION.

Corinthian Order of Architecture—Manufacture of Porcelain—Beet Sugar—A Manufactory of Clocks in Chicago, 11; Automatic Screw Propeller Brake—Thickness of Cast Iron Columns, 31; Conical Shell Projectiles, Beams and Trusswork, 91; The Temperature at which Metals become Red Hot—Conical and Flat Projectiles—Breech Loaders, 111; A Question for Architects—Improved Oil Cock—Deep Sea Sounding—Improved Loom Temple, 131; Steam vs. Frost—French Roofs—The United States Patent Laws, 171; How to Prevent Water in Cans Freezing—Means of Relief to Over-crowded Thoroughfares—The Aerial Railway—Coupling Mechanism, 191; Atmospheric Railways—The London Atmospheric Railroads, 211.

Original Papers.

Amalgamation, by J. H. Tieman, M. E., 4, 23, 103, 104, 123, 144, 164, 184, 263.

Chemical Nomenclature, A New, by Prof. S. D. Tillman, A. M., 2, 22, 42, 62, 82, 83, 104, 124, 142, 162.
Chemical Action of Steam on Sulphurets at a High Temperature, 270.

Formulas for calculating the cost of the production of Pig Iron, and for determining the value of iron ores and necessary fluxes, by C. A. Winter, M. E. 242.

Geology. A comprehensive View of the History and present stand point of, Adelberg & Raymond, M. E., 83, 103, 122, 142, 163, 183, 203, 223.

Lead in Kerosene Oil, 243.

Metals, The Electro positive, by Jos. Hireh, Ph. Dr., 3; Metals, The noble, Prof. F. E. Englehardt. Ph. D., 62; Metalliferous Veins and Mineral Life, Dr. A. Blatchley, M. E., 143, 163, 183, 203, 262; Microscope, Prof. P. H. Van der Weyde, M. D., 182, 202, 222, 242.

Nitro Glycerin. by Alexander Addison, C. E., 123; Nickel Assay, J. Herbert Bramwell, 224.

Petroleum, Origin of, Dr Lewis Feuchtwanger, 223.

Underground Transportation, Prof. Alfred P. Rockwell, 43.

Correspondence.

The Mining Interests and the Pacific Railroad, 32, 52.
Guido Kustel on the Loss of Gold and Silver in the Course of Reduction, 71.
Blunt Suggestions for the Benefit of the Slate Trade, 71.
Liquid Fuel—Petroleum as Fuel, 91.
The Miners' Tax in Colorado, 111.
Agrell's Roasting Furnace, 131.
Steel Manufacture, 191.
German versus American Mining Engineers, 191.
Method of Controlling Colliery Explosions, 211.
The Properties of the Sodium Amalgam, 131.
Interesting Facts about the West Indian Islands, 151.

Mining Summary.

GOLD AND SILVER.

Arizona, 46, 86, 147, 186, 225, 246.

British Columbia, 27, 87, 187, 265.

California, 5, 24, 66, 84, 125, 147, 206, 225, 246; Canada, 7, 46, 87, 107, 129, 148, 168, 206, 246, 265; Central America, 67, 247; Colorado, 4, 24, 45, 105, 128, 146, 166, 186, 206, 225, 244, 264.

Dacotah, 26.

Georgia, 186, 244.

Idaho 24, 65, 145, 167, 225, 245, 264; Indiana, 206.

Lower California, 67.

Maine, 107; Mexico, 87, 246; Montana, 6 66, 85, 127, 146, 166, 205, 225, 246, 265; Minnesota, 265.

Nevada, 5, 7, 24, 26 44 64, 86, 105, 125, 144, 165, 185, 204, 225, 244, 263; New Hampshire, 67; New Mexico, 107, 187; North Carolina, 246; Nova Scotia, 46.

Oregon, 6, 24, 86, 167, 246.

Portugal, 247.

South America, 247.

Utah, 265.

Virginia, 148.

Washington, 6, 46; West Virginia, 67.

COPPER.

Arizona, 8, 168.

Cuba, 168; California, 265.

Idaho, 169.

Michigan, 8, 27, 46, 67, 87, 107, 129, 148, 169, 187, 207, 226, 266; Montana, 7, 148. 169.

Nevada, 207; Newfoundland, 266.

COAL, IRON AND OIL.

Brazil, 69.

California, 187; Canada, 29, 69, 207; Colorado, 108.

Georgia, 267.

Illinois, 140.

Michigan, 8, 28, 207, 266; Missouri, 108, 267.

Nevada, 28; New Jersey, 48, 169; New York, 48; Nova Scotia, 88.

Ohio, 69; Oregon, 8, 47.

Pennsylvania, 8, 28, 29, 69, 88, 108, 109, 129, 149, 169, 187, 207, 227, 247, 226.

Virginia, 47, 48, 169.

Washington, 28, 48.

LEAD.

Illinois, 108, 128, 169; Iowa, 9.

Michigan, 28; Missouri, 227.

Utah, 9.

QUICKSILVER.

Oregon, 47.

Spain, California, &c., 47.

SLATE.

Michigan 28; Minnesota, 48.

Oregon, 9.

Pennsylvania, 149.

Vermont, 9.

Wales, 28.

MISCELLANEOUS.

Maine, 89; Minnesota, 89; Missouri, 48, 89, 147.

Nevada, 89.

Pennsylvania, 89; Prussia, 89.

Russian America, 187.

Miscellaneous.

A Bug Mine! 181; Absorption of Gases by Metals, 242; Age of Mountains, 23; (Alabama) looming up, 181; An Example of English Mining, 173; Anthracite Coal, 201; Apparatus for consuming smoke, 121; Area, and Population of British America, 89; Artificial Fuel 81; Atmospheric Action, 102.

Bauxite, 182; British Fossil Oxen; Bottled Caloric, 48; Bowels of the Earth, 84.

Carmen Island, 252; Cement and Gravel Mining, 13; Change in the Mint Laws, 81; Coal Statistics of, 114; Coal Traffic on French Railways, 189; Coal and Ore Washer, 74; Compressing Air, 21; Cooling Globe, the, 102; Copper Rock Pulverizer, 41; Copper Smoke Utilized, 49; Coppering Iron, 81; Copper Smelting, Nevada, 252; Crusher, 34.
Destroying Explosive Gases in Collieries, 222; Diamond Boring Machine, 142; Discoverer of Gold in California, 32; Distillation of Oil from Shales, 101.

Earthquakes at Fort Kalimeth, 109; East River Bridge, 191; Electric Lamp for Miners, 21; Electricity used in Iron Smelting, 141; Electrical Velocity, 191; Electro Magnetism, 122; Engineer's Alphabet, 84; Erie Coal Trade 109; Explosive Compound, 61; Explosions in Coal Mines, 41, 42; Experiments with the Davy Lamp, 253; Extraction of Silver from Copper Ores, 61; Extraction of Silver from Lead, 162.

Fossils from Mount Diablo, 43.

Geology of the Metals, 102; Granite, &c., 124.

Hard Hydraulic Cement, 122; Hayti, its Mineral Resources, 222; Hints, for the use of prospectors, 121.

Igniting point of Petroleom, 42; Improved Method (Reese's) of Roasting and Amalgamating, 102; Improvement in Smelting Furnaces, 161; Imperfection of the Geological Record, 164; Income from a Gold Mine, 141; Iridium in Canada, 222; Irruptions of Fire Damp in Cole Mines, 62.

Lead Ores in the United States, 232; Lead Smelting Works in Greece, 253; Lighting Mines, 81.

Magnetic Anti Incrustator, 122; Manufacture of Iron, 61; Mechanical Ventilation of Mines, 101; Mexican Mountain Railway, 221; Mexican Silver Mines, 102; Mines of Mexico, 141; Michigan Ore and Iron, 252; Miners Lamps, 224; Mining Academy of Clausthal, 202; Mining Land Districts, 213; Milroy's Patent Excavator, 242; Misrepresentation in Prospectuses, 222; Montana, 253; Mining Apparatus, fifteen hundred years old, 49.

Natural Waters, 35; Nature of the Sun, 191; New Amalgamator, 181; New Mineral from Borneo, 102; Nitro Glycerin, How to make it in Mining Districts, 252; Nuggets, 1.

Origin of Mountains, 252; Oxygen Gas, 9; Origin of Petroleum, 114; Precious Stones in Georgia, 122; Pennsylvanian Products, 221.
Resources of Missouri, 41; Roasting Furnace, 75; Rock Tunnelling Machine, 229; Ruins in Siam, 72; Russian America, 82, 161.

INDEX.

Saving Gold from Quartz, ; Salt and its Uses, 109; Sinking Apparatus, 15; Singular Terrestial Disturbances, 1; Slate Quarries, and their Management, 89; A Snail living Seven Years without a meal, 49; Steam Engine and Lord Worcester, 162; Steel Railroad Bars, direct from the Blast Furnace, 249; Swedish Iron, 202.

Tin Trade in England, 61; Treatment of the residue; of pyrites; Tunnelling Machine, 84; Tungsten Steel, by Bessemer's Process, 104; Transatlantic Telegraphy, 184.

Uren's Slime Washer, 1.

A French Authority on Fire-damp in Coal Mines; The Mineral Resources of Austria; Manufacture of Crucibles: "Toccolina," or Italian Petroleum, 265; Sterro-Metal; Sodium Amalgam, 261; Gold Mining in Victoria; Mineral Resources of South Carolina; Smelting in Humboldt County, Nevada.

Machinery and Engravings, Descriptions of.

Bituminous Coal Furnace, 161.
Carvalho's Steam Superheater, 1; Case's Diamond Drill, 181.

Densmore's Boilers, 241.

Ericsson's Caloric Engine, 41.

Foster's Patent Peat Machine, 193.

Improved Rotary Pump, 222,

Leslie's Improved Boiler, 21.
Lindsay's Improved Screw Wrench, 193.

Self-acting Feeder, 232.
Stevenson's Turbine Water-wheel, 61.

The Hicks Boiler, 212.

Woodbury, Booth & Co.'s Horizontal Engines, 101.

Wyatt Reid's Superheating Apparatus, 147.

Improved Oscillating Engine, 261.

New Publications.

American Journal of Photography, 171; American Phrenological Journal, 131, 251; Backbone, by Dixon, 31; Coal, Iron, and Oil, by Daddow and Bannan, 31; Hand-books of Iowa and Minnesota, 31; Hollister's Mines of Colorado, 71; How to get Rich, by Hawxhurst, 31; Journal of Franklin Institute, 131; London Mechanics' Magazine, 251; Map of Gilpin County, embracing the Central Gold Regions of Colorado, 171; Preventing Scale in Boilers, Van der Weyde, 131; Reports of the State Mineralogists and Surveyors of Nevada for the year 1866, 111; Report of Commissioner of Mines for Nova Scotia, 31; Scientific Journal, 171; Shakings, Etchings from the Naval Academy, by Park Benjamin, 171: Sweet's Report on the Proposed Canal from Washington to Annapolis, 31; United State's Directory, by Dunn, 11.

Market Reviews and Reports.

COAL TRADE, New York, 12, 33, 53, 72, 92, 112, 137, 151, 172, 188 203, 228, 248, 268.

COAL TRADE CIRCULAR, 34, 54, 74, 94, 153, 189, 209.

COPPER ORES, New York and Baltimore, 13, 54, 74, 94, 113, 133, 153, 173, 189, 201, 249.

METAL MARKET, New York, 12, 33, 52, 72, 92, 111, 132, 151, 182, 187, 203, 228, 248. London, 13, 34, 54, 74, 94, 113, 133, 153, 173, 189, 209, 229, 249, 269.

SLATE TRADE, New York and Boston, 12, 33, 53, 72, 92, 112, 132, 151, 171, 188, 208, 228, 248, 268.

STOCKS, Boston, 14, 34, 54, 74, 94, 113, 133, 153, 173, 189, 209, 229, 249, 269. New York, 11, 32, 52, 72, 92, 111, 131, 151, 171, 188, 208, 228, 248, 268. San Francisco, 13, 34, 54, 74, 94, 113, 133, 153, 173, 189, 209.

Special Notices.

Player's Improved Hot Blast Stove, 15; Morton's Pens, 15; Ericsson Caloric Engine, Coal-Cutting Machinery, 35; Steam Syphon Pump, 54; Hubbard & Whittaker's Machine Works, 54; Caloric Engine, 54; Stevenson's Helical Jonval Turbine, 74; *Inventor and Engineer*, 74; *Telegraphic Journal*, 74; Colwell, Shaw & Willard's Lead Pipe, 134; *Colorado Times*, 154; *Lake Superior Miner*, 154; Baker & Co.'s Journal Box, &c., 173; Clayton's Steam Pump, 173; *Portage Lake Mining Gazette*, 173; An Opportunity to Invest in Slate Lands, 193; Co-partnership, 193; Manvel & Lindsay's Screw Manufactory, 233; Successful Manufacturers, 272.

Statements.

The Raritan Bay Mining and Manufacturing Co., 11.
Quicksilver Mining Co., 32.
Plymouth Gold and Silver Mining Co. of Montana, 52.
Clark & Upson Mining Co., Montana, 72.
Morris Canal and Banking Co., 72.
Mountain King Silver Mining Co , 72.
Quicksilver Mining Co., 111.
Mount Blanc Silver Mining Co., 131.
Lehigh Coal and Navigation Co., 131.
Feeder Dam Coal Co., of Philadelphia, 131.
De Lery Gold Mining Co., Quebec, 151.
Delaware and Hudson Canal Co., 151.
St. Joseph Lead Co, (St. Francois Co., Missouri), 211.
Missouri Mining Bureau, 250.
North Carbondale Coal Co., 251.

Meetings.

10, 32, 52, 72, 92, 111, 131, 151, 171, 191, 211, 231, 251, 270.

Dividends.

11, 32, 52, 72, 111, 131, 151, 171, 211, 231, 251, 270.

Assessments.

11, 32, 52, 72, 131, 171, 211, 231, 270.

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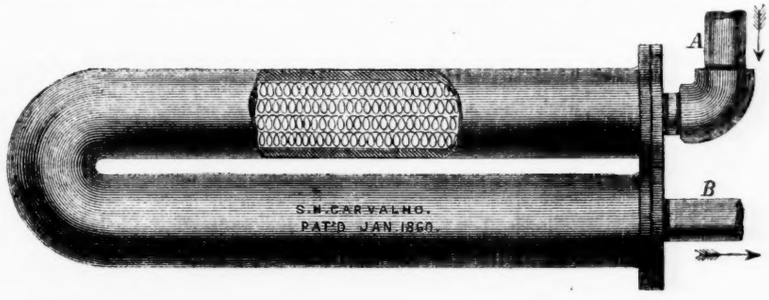
VOLUME III.
Number 1.

NEW YORK, MARCH 30, 1867.

$4 A Year in Advance.
Single Copies Ten Cents.

IMPROVED STEAM SUPER-HEATER.

The necessity of super-heating, or drying steam, will be apparent, when we remember that in ordinary boilers the steam is generated wholly at the bottom, and previous to its passing into the steam space it becomes completely saturated with heated water, which, although of no advantage in producing power, causes a great increase in the consumption of fuel. The condensation of the steam in its passage through pipes still further adds to the quantity of water it contains. The super-heating or drying process consists in changing this watery vapor into pure elastic steam. We present an engraving of Carvalho's method of accomplishing this. It consists of one or more cast iron chambers, cylindrical and of the ⊂ shape, fig. 1. In these chambers are closely packed coils of wire, which touch each other and the inside of the chamber on all sides. The wire draws the heat from the sides of the chamber, preventing their becoming too hot, and by breaking up the current of the steam dries and expands it. From figures 2 and 3 the arrangement of the super-heaters for ordinary flue or tubular boilers will be understood. The heaters marked D are placed in the flue under the boiler, so that the heated gases on their way to the chimney may surround them. Steam enters from the boiler at A, and is delivered at B to the engine, or wherever required, two super-heaters being employed to more thoroughly dry the steam. A great advantage of this superheater is that it may be attached to any boiler. It can be economically used in all manufactories where steam is used for power. Further particulars may be learned by applying to Henry W. Bulkley, engineer, 70 Broadway, New York.



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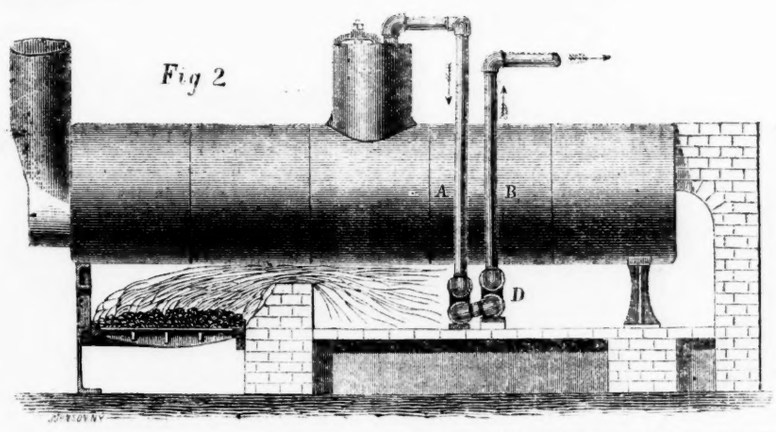

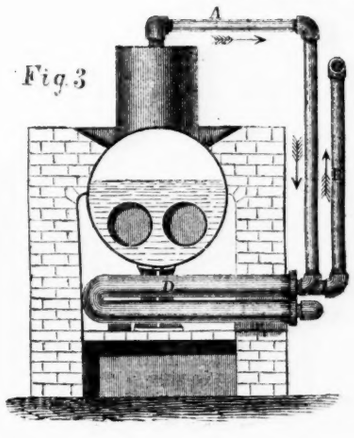

CARVALHO'S IMPROVED STEAM SUPER-HEATER.

New Slime Copper Washer.

The Uren slime washer, says the Portage Lake *Gazette*, is now in daily operation, and its ability to wash slime sand and obtain the almost impalpable particles contained therein is fully proven. Two of these machines, we think, will dress the slime copper up to sixty per cent. purity. As to their capacity no correct estimate can be formed as yet, no trial having been made, but four of them would undoubtedly easily dress to the above purity the slimes from two of Ball's improved heads, or sixty-four of Gate's heads. In such operations the "headings" or "hutch-work" from one machine would be re-dressed on second. Although working finely now, it is thought when set up in its proper place, and the slimes allowed to settle some in vats before conducting to the machines, a larger amount of mineral will be obtained. These machines are quite inexpensive, twelve feet in length, and consist of an endless rubber belt, three feet wide, traveling a speed of about fifty feet a minute. One side of the belt is raised five degrees higher than the other, and the slimes are deposited on the raised side of the receiving end. A small water launder furnishes a steady head of water, the quantity being gradually diminished towards the discharging end. The slimes, it will be seen, run in on the receiving end of the belt at a right angle to the course toward the discharge, and as it is borne along is crossed by the small stream of water flowing from the launder, which, of course, is constantly washing it away toward and over the lower side of the belt into a waste launder. When the discharge end is reached, not more than one-fifth of the sand is left on the lower side, while the copper and iron is scarcely perceptible farther up on the belt.

Nuggets.

But few persons, even among miners, have any idea of the number or value of the large pieces, or nuggets, that have been found in California since the discovery of gold up to the present time. A correct list of them would astonish the most incredulous, but as no one has taken the pains to make a record of those that have been made public, and as many of the finest ones were quietly pocketed by the lucky finders, we are left mostly to conjecture. In Bancroft's Hand Book an imperfect list is given of a few found in the vicinity of Columbia, Jamestown, Sonora and Shaw's Flat, from 1856 to '58, that gives some idea of the number and size in the Southern part of the State. Of 54, the aggregate value is $110,358, an average of $3,043. The smallest weighed seven ounces, and the largest 864 ounces. Nine were 20 pounds or over; one 30 and another 32½, and a third, found near Columbia, and the largest of which we have any account, 72 pounds. Probably the above named localities have turned out a much larger proportion of nuggets than any other, but from them some idea may be formed of the aggregate number and value.—*Amador Led.*

Singular Terrestrial Disturbances.

Galignani gives an abstract of a curious paper by M. A. Mauget, read before the Academy of Science,

He states that from May, 1866, the waters of all the streams and springs of the province of Naples, and the adjoining ones, began to diminish until June. So far there was nothing remarkable, that being about that time an annual occurrence, but on June 29th, to the surprise of the inhabitants, the waters of the wells, springs and rivers or rivulets of the country became suddenly muddy, and diminished most rapidly. The same was the case with the Carmignano canal, which supplies Naples with water, and with another canal called Lagno di Molito. But what caused the greatest astonishment was the fact that all the fish of these different watercourses came to the surface half dead, and were caught in that state by the people in prodigious quantities. On the 30th the waters became clear again, but they had experienced a diminution of at least one fifth. The wells fed by springs, which on the previous day were all dry, to find water again had to be sunk deeper, and even then the quantity obtained was but one-half the former amount. Sorrento was left entirely without water, notwithstanding it possesses eleven large reservoirs built in Julius Cæsar's time, and considered the most remarkable monuments of that period in this part of the country. Two of the many artesian wells bored by M. Mauget in the valley of the Sebeto, were filled with sand at the same period, and it was with great difficulty they were got in order again. One of them, which generally supplies 2,000 litres of water per minute, for several days ejected upwards of 200 cubic metres of pumicestone and trachytic sand. The cause of these strange phenomena is attributed by M. Mauget to some great subterranean convulsion, whereby a quantity of carbonic acid must have also penetrated through the large fissures which diverge from Mount Vesuvius and poisoned the waters so as to stupefy the fish.

Wonderful Ruins in Siam.

Gen. Perrin, a Frenchman, mandarin of the third class, commanding the land forces of the King in Siam, writes to a French paper as follows: "For six days' journey of an elephant, I have traversed the ruins of Ancor-Xiat, only penetrating them at intervals, where explorers had been before. What I have seen of monuments, temples, palaces, columns, staircases and piles of marble, cannot be told. They would not believe me. The people of the country say that the ruins are spread over a circle of from ten to twelve leagues in diameter. What was the city that existed there, and of what empire was it the capital? I have seen temples in a good state of preservation, (except the vegetation that had sprung up in them), which measured not less than a league round. There are forests of marble columns; everything is of marble. Although much may have disappeared beneath the soil, what remains is far above what we see at Versailles or elsewhere. In some places they are as solid as though built but yesterday. But for the undergrowth and the effect of lightning, these monuments, which the people say are from four to five thousand years old, might be to-day in complete preservation. I regret that I had no photographic apparatus, I assure you, and believe me or not, that the most celebrated monuments of ancient or modern Europe are as mere barracks compared with these, while our palaces and basilicas, the Vatican and Coliseum are little better than dog-kennels in comparison. I wished to ascend to a temple which appeared to be in a good state of preservation. There were eleven stair-cases, of I know not how many steps, which must be ascended to arrive at the first of the five peristyles. I commenced my upward journey at half-past six in the morning; at half-past seven I had scarcely entered the lower halls. Fearing that I might have to descend the steps in the heat of the day, I was compelled to shorten my visit. The walls are in every part sculptured and ornamented. The first effect which the sight of these monuments produced upon me was one of amazement. I am no amateur to go into ecstacies over small things. The next morning I climbed the winding stair-case of an immense tower, situated on an eminence. Arrived at the summit I enjoyed the sight of the ruins. There are, in localities where I have not yet penetrated, palaces of a height and grandeur truly colossal. With a field-glass I examined the details. Their architectural richness is unrivalled, and they extend into the territory of Cambodia, a distance of ten or twelve leagues. Picture to yourself how Paris would appear in ruins. A few rough stones, scattered over a diameter of two or three leagues at the utmost. Here there are on the ground, and below its surface, marble already hewn in sufficient quantities to build, even as the giants have built here, all the cities of the universe. I have seen the leg of a statue, the great toe of which was eleven times the length of my hunting rifle. It is in marble like the rest, in fact, there is no other stone near except the pieces of colored marble used for borders, and for the eyes of the statues. There are pedestals of steps, reft of their statues, which are more lofty and larger than Saint Germain l'Auxerrois. Think of octagonal pyramids cut off at the middle, and all in marble. Who has done these things? If it was some illustrious dynasty, they can have but little satisfaction with the oblivion that has enveloped their magnificent monuments. The people of the country have no real conception of the builders, although their literature extends back into the centuries much farther than ours.

Original Papers.

[PREPARED FOR THE JOURNAL OF MINING.]

A NEW CHEMICAL NOMENCLATURE.*

By Samuel Dyer Tillman, A. M., Professor of Technology at the American Institute of the City of New York.

The present seems very opportune for the introduction of a Nomenclature which will more completely methodize the Science of Chemistry. By such aid, students, who formerly deserted the study because they found themselves gradually sinking into a quagmire of incongruous names, may advance on firm ground, and view with satisfaction and profit the fair fields opened on every side by the distinguished chemists of our own time. The old nomenclature, based on the joint production of DeMorveau, Lavoisier, Berthelet and Fourcroy, published in 1787, has been frequently amended and enlarged; yet, to preserve the connection and consistency of the whole, names and classifications were retained long after they had lost their original significance. Even the broad line of distinction between acids and salts (made when oxygen acids and neutral salts only were known), gradually diminished with the successive discoveries of acid salts and the promulgation of new views by Davy and Dulong, until it is now no longer recognized by those who regard the whole class of hydracids as true salts. A fatal error was committed at the outset, in attempting to define the acids containing most and least oxygen, by adopting as terminals (rendered into English) *ic* and *ous*, and the corresponding terminals *ate* and *ite* for salts. Subsequent discoveries of higher and lower oxides involved the necessity of using, as prefixes to the words in general use, the terms *hyper* or *per* and *hypo*. Still these amendments have not obviated the difficulty, as will be seen by reference to the combinations of oxygen with sulphur. This conflict of terms was not, however, the greatest evil. The *ic* and *ous* terminals are worse than useless for expressing the degrees of oxidation, because the same terminal has a different signification in almost every series of oxides. Similar objection may be made to the use of the terminal *a* in the names of oxides: for example, Soda, now Na_2O; Magnesia, MgO; Alumina, Al_2O_3; and Silica, formerly SiO_3, by many now written SiO_2. Early in the present century, the words *protoxide, deutoxide*, etc., were used to distinguish the several degrees of oxidation having the simple ratio of combining proportions, i. e. 1 : 2, 1 : 3, 1 : 4. No more complex ratios than 2 : 3 were provided for. Many of these, and similar names applied to electro-negative elements, are often misused by distinguished authors who have adopted the atomic notation; for instance, *sesqui* to designate the combination of six atoms of a halogen with two atoms of carbon, or of a biatomic metal.

The comparatively recent discovery of a great number of organic compounds, so called, required the coinage of many new names to designate radicals. Simultaneously the attempt was first made by German chemists to state definitely by prefixes the number of "equivalents" of each element in combination, which has resulted in the formation of names of frightful length, scarcely pronounceable and seldom remembered. A complete catalogue of the chemical bodies now known would embrace several thousand terms. The novice, misled at first by common and commercial names, like "milk of lime," "sugar of lead," "cream of tartar," "oil of vitriol," and "butter of antimony," but who had advanced far enough to find no sulphur in sulphuric ether, no copper in copperas, no lead in black lead, no soda in soda water, and to be assured that "Dutch liquid" is not imported from Holland, might look with interest and wonder on the accumulated names approved by the highest authorities, and enquire whether this magnificent patchwork could be of much service as a chemical chart. To a negative reply, should be added, "Yet a substitute for the whole has been provided by the Notation."

The introduction of chemical symbols by Berzelius marks an era of progress quite as plainly as the first employment of Arabic signs and numerals in the mathematics. The notation is now frequently employed to the exclusion of chemical names, in oral as well as written communications. Its general adoption forty years ago, with the atomic signification originally attached to it by Berzelius, would have prevented the confusion of terms and signs now consequent upon the conformation of the atomic volume of gaseous elements to the one standard. Berzelius barred certain letters to signify that one-half the combining weight was the atomic weight; in other words, that the so-called "equivalent" contained two atoms. Gerhardt, on the other hand, used the same mark to denote that the combining weight must be doubled to express the atomic weight. Miller, in the third edition of his "Elements of Chemistry," designates the old notation in the usual way, and the new notation by Italic capitals; while Watts, in his "Dictionary of Chemistry," still in process of publication, just reverses Miller's arrangement.

The following symbols, representing a molecule of water, according to three different views, will explain what induced Berzelius, who measured volume and atomic weight on the oxygen scale, to halve the symbols representing the combining proportion of hydrogen; and why Gerhardt, who simplified measurements by making the hydrogen atom the unit of weight and bulk, was led to double the value of the symbol for oxygen, without knowing to how many other symbols the doubling process would finally be applied.

Dalton.†	Berzelius.
(2 vol.) H O (1 vol.)	1 vol. H } O 1 vol. 1 vol. H }
Wt. 1+8=9.	.5+.5+8=9.

Gerhardt.

1 vol. H } O 1 vol.=H_2O_2.
1 vol. H }

Wt. 1+1+16=18.

No inconsistency arises in the interpretation of these symbols; and although grave objections have been made by Herschel and Odling to the mingling of mathematical and chemical signs in chemical equations, it must be admitted that the symbol of a compound is universally regarded as the real body which may be clothed with synonyms more or less expanded to suit the peculiar views of different schools.

Quite a serious derangement of the nomenclature has followed the introduction of the atomic notation. A majority of the old names have thus become inappropriate; and chiefly for this reason, many well known European chemists, and nearly all American chemists, still prefer to use the old system expressing combining proportions. No sweeping innovation which changes or perverts the meaning of old terms, rendering old and familiar works on chemistry comparatively worthless, and which tends to eradicate fundamental ideas, will be accepted by the present generation. How utterly futile

* Read at the meeting of the American Association for the Advancement of Science, held in the city of Buffalo, Aug. 16th, 1866; to which are appended notes prepared for the *American Journal of Mining* by the author.

† A true view of combining weights was entertained by Wenzel, in 1777. Richter amplified this view in 1792. In 1803 Dalton conceived the idea of elementary atoms, which, however, was not made plain until the publication of the first volume of his "New System of Chemistry" in 1807. In the same year Guy-Lussac discovered that gases always combine in simple ratios of bulk or volume. A few years later Berzelius put forth the idea that the combining proportions of elementary gases should conform to the same volume which involved the halving of the combining weights of Hydrogen, Nitrogen, Chlorine, etc., while Dalton still held that the bulk of each atom of these elements was twice as large as that of Oxygen. Dalton's doctrine of the absolute indivisibility of atoms was simply a revival of the hypothesis promulgated by several ancient philosophers. Chemists of the present day have avoided all discussions of an abstraction by defining an atom as the smallest particle of matter which can enter into combinations. It is *chemically* indivisible, and cannot exist in a seperate state. The simplest molecule being a pair of atoms of the same element.

would be the unanimous resolve of a World's Convention to change the value of our common numerals so as to represent a unit by the figure 2! Yet if they should propose to leave the old signs undisturbed, and to use new characters having the same numerical value with other important significations, the project could perhaps be carried into practical operation. Thus in any science it will be found most feasible to designate new views or new structures, by new and appropriate names. This subject has commanded the attention of all advanced chemists. At the meetings of the London Chemical Society, the question has been discussed by Graham, Williamson, Miller, Brodie, Frankland, Odling, Hofmann, and other distinguished members. Gmelin's names, as modified by Watts and his compeers, seem to be received with most favor. Williamson, Foster, and Williams have suggested valuable alterations. One would, however, be safe in predicting that while the *ic* and *ous* system predominates, the root of the perplexity will not be reached.

The nomenclature now presented is the result of an attempt to obviate the continual embarrassment attending the prosecution of chemical studies. Failing to remember the exact composition of certain compounds, the writer resorted to mnemonical methods; and, after repeated trials, devised, in the year 1850, a system of words, generally unlike any found in dictionaries, which, with certain modifications, he has constantly employed since that time. It was originally adapted to the old classification of acids, bases and salts, but was so arranged as to be most conveniently used in defining combinations of hydrogen or a metal with a radical according to the binary system. It was also early employed in explaining the now discarded Nucleus theory, as advocated by Lœwig in 1851.

Although the importance of the Typical system of classification was clearly set forth by Hunt in 1848 (*Am. Jour. Science*, V, 265; VI, 173), not until after memorable experiments and discoveries by European chemists had demonstrated its great value, was the decision made to modify this nomenclature so as to be used with facility in expressing the new views. In attempting to take this step, however, another serious obstacle was encountered in the diversity of opinion regarding atomic weights. Kopp and Regnault had thrown new light on the subject; yet chemists of the Unitary school still agreed with the views originally advanced by Gerhardt, and recognized many metals, besides silver and those of the alkaline class, as monatomic. In 1861, however, Gibbs made it manifest that if the atomic weights of carbon, oxygen and sulphur be taken respectively at 12, 16 and 32, the received numbers of at least fifty elements must be doubled (*Am. Jour. Science*, XXXI, 246). More recently, prompted by Canizzaro, the disciples of Gerhardt have almost unanimously renounced such opinions on comparative atomic weights as are at variance with those of Berzelius.

The meaning of the new notation having thus been definitely fixed, while the nomenclature may be said to be still in the transition state, an atomic system of names intended to supply the place *both of the notation and the old nomenclature*, is submitted for candid and critical examination. A leading consideration has been to produce a system which will assist the student in acquiring and retaining a knowledge of fundamental laws; also to provide such brief technical terms as will enable chemists generally to express their views with more conciseness.

Doubtless the most rapid advance has been made by students who have daily witnessed the operations of the laboratory. No oral description of chemical experiments could make so deep and permanent an impression. This principle of retention was well appreciated and expressed by Horace:

> Segnius irritant animos demissa per aurem,
> Quam quæ sunt oculis subjecta fidelibus.

Next in importance to experimental knowledge, must be ranked a system of words and symbols which will convey at sight, by means of their combinations, a clear idea of the union of the elements, without denoting in every instance, by rational formulæ, the manner of such union. The ear also should be brought into service in such a system, by making the very sound of the symbols so excite the power of association as to bring before "the mind's eye" the whole series of similar and nearly related compounds. To accomplish these objects, it was necessary to construct an entirely new scheme, by providing for every well-investigated chemical body a name which should at once designate *the kind and number of atoms* composing it, and to a certain extent, its typical and functional characteristics. This work was accomplished in a true conservative spirit, by building the new structure from old materials, and upon a foundation which is the result of the combined labors of those truly great men who have devoted their lives to the advancement of Chemical science.

[TO BE CONTINUED.]

(WRITTEN FOR THE JOURNAL OF MINING.)

THE ELECTRO POSITIVE METALS—No. 13.

ALUMINIUM—ITS PREPARATION.

By Joseph Hirsh, Ph. Dr.

[Continued from Page 297, Vol. II.]

As soon as the cast iron pots or earthen crucibles, mentioned in our last article on this subject, have cooled down sufficiently, the upper layer of the contents is removed, consisting of chloride of sodium, or ordinary salt, while, from the mass beneath, small metallic globules of aluminium may be picked out, which are not entirely pure, and which are separated best from the flux or slag by washing with water. The latter, however, exerts an undesirable destructive influence upon the metal by dissolving some chloride of aluminium from the flux, so that with ordinary care, only those globules of aluminium are saved which are larger than a pin's head. They are dried, remelted in an earthen crucible at a red heat, when they are squeezed with an earthen spatula, uniting to a single button of aluminium. The sodium used in this process should contain no admixture of carbon, which occasionally adheres to it from careless preparation, as in this case cyanates, or cyanurates, are formed, which, in contact with water, develop ammonia, and so destroy aluminium. Aluminium globules should also not be melted together, whenever they contain a considerable amount of sodium, as they then would ignite, the combustion continuing until all the sodium was consumed. Remelting with some bichloride of aluminium would be more indicated in this case. Copper vessels should also strictly be avoided in all the operations mentioned, as their use would result in a brittle alloy of an unsightly, grey appearance, which, on exposure to the atmosphere, soon becomes covered with a black layer of oxide or sulphuret of copper. According to Peligot such an alloy may be rendered ductile by cupellation with lead. According to Hulot such an alloy owes its brittleness only to its structure, and may become malleable simply by high pressure. In this state it becomes hard and very unchangeable.

REDUCTION OF ALUMINIUM BY SODIUM VAPORS.

This simple and easy method produces at once pretty pure aluminium. On a small scale, a mercury flask is filled with a mixture of chalk, carbonate of soda and charcoal, as mentioned in the manufacture of sodium. An iron tube about ten centimetres long is inserted into the flask, its second end reaching into an earthen crucible of considerable size, at about one-quarter of the height of the crucible. The flask is next set into a small blast furnace, exposed to a white heat, when, in its contents, carbonic oxide will be developed, which ignites in the crucible and dries it. The carbonic oxide is followed by sodium vapors, known by the peculiar color of their flame. As soon as they appear, chloride of aluminium is introduced in small portions into the crucible. It is instantly vaporized and decomposed by the sodium vapors. Whenever the vapors arising from the crucible cease to be acidulous, and the sodium flame, which burns briskly in the atmosphere of chloride of aluminium, becomes dim, the time has arrived for adding another portion of the chloride of aluminium. The cessation of the development of sodium vapors indicates the conclusion of the process. The crucible is then broken up, the upper portions of its walls containing a saline mass, which consists principally of chloride of sodium, a large number of small aluminium globules, and some carbonaceous soda, the latter being chiefly present when the process has progressed but slowly. It is due to a decomposition of the carbonic oxide by the sodium. This saline mass is moistened in order to facilitate the separation of the metallic globules. The reaction of the dissolving water has to be watched closely. If it is acidulous, it has to be renewed frequently. But when it is alkaline, nitric acid, diluted with three or four times its weight of water, has to be added, in order to neutralize the alkali, while it leaves the aluminium intact. With the alkali the latter is not the case. The globules of aluminium are united by remelting them, when again the greatest care has to be taken in the details of the process, as specified at the beginning of this article.

REDUCTION OF ALUMINIUM BY THE GALVANIC BATTERY.

For this purpose a glazed porcelain crucible is best used, which, for the sake of safety (of the crucible), is set into a larger one of stone ware. Both crucibles have one common cover, having a narrow, wide opening for the insertion of a thick and wide platinum plate, which serves as the negative electrode. Another opening in the cover permits the insertion of a tightly-fitting porous vessel, which contains a coke cylinder, serving as the positive electrode. The bottom of this porous vessel has to be somewhat elevated above the bottom of the porcelain crucible. The porcelain crucible and the porous vessel are both filled to the same height with chloride of sodium and aluminium, which may best be formed in the following manner: Two parts of chloride of aluminum is mixed with one part of dry, pulverized chloride of sodium, in a porcelain dish, heated to 425° F. In a short time the two substances unite under evolution of heat, and a homogenous liquid results, which may at once be filled into the crucibles. The electrodes are next inserted, and the electric current of at least four elements (Bunsen's) passed through the circuit. Aluminium, together with some chloride of sodium, is deposited on the platinum plate, while chlorine and some chloride of aluminium are discharged in the porous vessel. The vapors generated are annihilated by throwing occasionally small quantities of dry, pulverized chloride of sodium into the porous vessel. This salt, during the operation, is also deposited on the negative pole. From time to time the latter is removed, whenever it is covered with a heavy metallic and salty deposit. On cooling, the saline covering is broken off the platinum plate, returned to the bath, and the former melted in a porcelain crucible, placed in a larger one of earthenware. On cooling, the mass is exhausted with water, which dissolves a large amount of salt, leaving a grey, metallic powder behind, which may be remelted into a single piece, a flux, in case of necessity, being used, consisting of the chloride of aluminium and sodium. The porous vessel contains, at the end of the operation, a large amount of carbon, separated from the positive electrode. This first crude aluminium, pro-

duced by the galvanic current, is always brittle; this, though, is more the fault of the impure chloride of aluminium used, than of the method itself. But it cannot be denied, that sulphur, silicium and iron may be removed by the reduction with sodium while in the galvanic process they remain in the solution of the double chloride, and enter the first portions of the reduced metal. If the double chloride is pure, the solution may be employed for depositing aluminium upon copper, which then replaces the platinum plate, while the positive pole carries a bar of aluminium. The temperature, in this case, has to be kept a little below the melting point of the aluminium. The deposition of aluminium takes place readily, but is occasionally mixed with the chlorides. In this case, the plate has afterward to be washed in a large amount of water, to prevent corrosion of the metal. When cryolyte is to be employed in this process, it should be mixed with some of the double chlorides of sodium and aluminium, in order to melt easier.

(TO BE CONTINUED.)

[TRANSLATED FOR THE JOURNAL OF MINING.]

AMALGAMATION—No. VI.

BY J. H. TIEMANN, M. E.

It has been previously remarked that the advantage which hornsilver possesses, consists in the easy decomposition of this salt, and the quicker absorbtion of the silver by the quicksilver, by galvanic action. But the same thing occurs with sulphate of silver in a more remarkable manner. If brought together with quicksilver, an action immediately commences without the presence of iron; the quicksilver becomes covered with a skin which, where removed quickly, re-forms. It consists of sulphate of quicksilver, in which sulphate of silver is mechanically suspended. If this is rubbed in a mortar with iron, silver amalgam instantly forms. If, on the other hand, the iron is first brought into contact with the sulphate of silver and quicksilver in water, the pulsation is very energetic, and the formation of amalgam begins almost instantaneously. This deportment of sulphate of silver cannot, however, be utilized in amalgamation; at least all the experiments which have heretofore been made in the large way, by roasting the ores without the addition of salt, have universally given poor results. An experiment made for this purpose at Freiberg in 1814, with a charge containing 7½ ounces of silver, gave as a result 6½ ounces in the tailings. This is caused by the impossibility of roasting in such a manner that all the silver shall be converted into a sulphate, and retained as such. It is generally again decomposed in the roasting, and converted into metallic silver, which combines with the sulphur fumes, and again forms a sulphide. The incomplete extraction of the silver is not the only cause which forbids such an amalgamation; it is accompanied by a great loss of quicksilver, for in forming the sulphate of silver a number of other sulphates are necessarily formed, against the action of which the quicksilver is not sufficiently protected by the iron in the barrels. As the success of the European process depends upon the conversion of the silver into hornsilver, the same holds good for the South American process, though the manner of producing this effect, as well as the method of extracting the horn silver, differs in the two countries. While in Europe the hornsilver is produced in the dry way, by roasting the ore in an atmosphere of chlorine, in America it is produced in the humid way, by the chlorides of iron and copper; and while, in Europe, the decomposition of the hornsilver is effected by the double action of two metals, in the American process the quicksilver alone effects the decomposition. In both countries the chlorine is obtained from sea salt—in Europe by the action of the anhydrous sulphuric acid set free in the roasting; while in the heaps it is obtained by a double affinity between the magistral and sea salt, uniting first with the iron and copper, from which it is taken up by the silver. In the latter case, the success of the process depends principally upon the composition of the magistral, which must contain as much sesquoxyd salt as possible, and not suboxyd. If it consists of the latter when put into the heap, it changes to basic chloride, which is not easily decomposed; when composed of the former it changes to an easily decomposed chloride, which yields just as much chlorine as it contains more than a basic chloride. For this reason a magistral with an excess of sulphate of copper, is far preferable to one with an excess of sulphate of iron. The formation of hornsilver in the humid way, with magistral, only succeeds easily and perfectly when metallic silver is acted on—sulphide of silver or ruby silver appear not to be acted on till they have been first oxydized. In the wet heaps or montones, mixed with metallic and soda salts, and exposed to the sun and air, a general decomposition goes on, causing oxydation of the sulphides of silver, changing them gradually, though slowly and incompletely, to chlorides. The decomposition of the mass, the formation of hornsilver and the amalgamation, in America, all form one process; in Europe there are two distinct operations—roasting and amalgamating; but these two lead more quickly and certainly to the desired result than the single operation, and do not waste so much quicksilver as in the single operation, where the quicksilver has to effect the decomposition of the hornsilver, and, at the same time, is exposed to the decomposing influences of the magistral; when this works too energetically, it is partially counteracted by the addition of lime, which creates a new danger. It decomposes the chlorides, and easily causes a cessation of the working, which has to be in turn counteracted by fresh additions of magistral. Although the European method possesses many advantages over the American, yet still the latter has some advantages over the former, especially in requiring less salt, and a disproportionately less quantity of pyrites. In the former process the salt performs different functions, the principal one of which is of course the formation of hornsilver; but to do this completely, it is necessary that the formation of silicates of silver and iron matte, during the roasting, be prevented. Where the former are produced, the chlorine has no effect upon them, and if much iron matte is formed it carries off a great deal of silver, as a sulphide. This can only be prevented by completely surrounding and impregnating the charge with fumes of chlorine; in this way a portion of the chlorine escapes as subchloride of sulphur, another portion as free chlorine, and still another portion volatilizes as salt, making from 60 to 90 times as much more as is requisite for the conversion of the silver into a chloride. An excess of pyrites is necessary, for the reason that but a small portion of the sulphur is converted into sulphuric acid, which is requisite to act on the salt—more than half of the sulphur escaping as subchloride and sulphurous acid. The sulphur fumes which arise before the formation of sulphuric acid and chlorine has begun, surround and impregnate the charge, assisting materially in preventing the formation of oxyd of silver, and its combination with quartz. Even the metallic silver, which is reduced from the sulphate, is hereby again partially changed to sulphuret, till the chlorine commences to form, which drives off the sulphur and unites with the silver. In the American amalgamation the circumstances are very different. There is no action of fire, and almost all the sulphur of the magistral is already changed to sulphuric acid, and made completely available, so that when too much lime has not been added to destroy the action of the magistral, but 1½ parts of magistral are needed to each part of salt, while in the dry way 2 to 3½ parts of pyrites must be added for the same amount of salt; and the amount of salt required in the American process is less, for there is neither a volatilization of salt nor of chlorine, and 2½ to 3 per cent. is sufficient to produce enough chlorine for the formation of the hornsilver, and for the subchlorides in the magistral. If more is required it is on account of its impurity.

[TO BE CRNTINUED.]

Mining Summary.

GOLD AND SILVER.

Colorado.

The Colorado *Times* of March 13th says: The following are the shipment figures for those few who sent gold to the East this morning, by Wells, Fargo & Co.'s express. Many here ship only occasionally, and many, too, by private hands: Geo. T. Clark & Co., bankers, 310 ounces; Warren Hussey & Co., bankers, 450 ounces; the Rocky Mountain National Bank, (Kountze Bro's and Co.,) 300 ounces; total, 1,060 ounces, or about $21,500 00 currency valuation. In addition to the mill runs given yesterday, we read this morning that the Black Hawk Co. took out 225 ounces last week; the Smith & Parmelee 75 ounces; the Sensenderter Co. 140 ounces; the Ophir Co. 62 ounces; the Kimber mill for W. H. Cushman, 68 ounces, and Mr. Keith's mill 90 ounces of the genuine stuff. The reason why the mills of Smith & Parmelee & Co., and others, took out so little this week compared to others, is because of backsets from repairs and incidental delays. The weekly run of the Consolidated Gregory works, this week, is not reported as yet .... At Hussey's Bank, this morning, we saw a glorious chunk of rich retort, weighing 122 ounces and 7 pwts., the result of last week's run of Alps & Grenada Co.'s 12-stamp mill. It is worth about $2,500 in currency. The manager, Mr. Geo. R. Mitchell, had the above cleaned up from only six cords of ore, from the Alps at a depth of 265 feet. At the same place, we saw a nice lot of retort; some 156 ounces of very beautiful gold, which was got the past week from the Gunnell Co.'s mill by manager Fitzpatrick. But for the snow and severe weather, he would have had a much larger lot.....Every day or so we see the glistening silver coming over from the Georgetown district, which is enough to make one wish he had a pick and assay furnace, that he might let the pen scissors "drap." Mr. J. T. Herrick had a handsome silver "slug" in his hand here yesterday, which weighed 8½ ounces, and was taken out of only *six* pounds of the ore from the Anglo Saxon ledge, on which he is operating for his company, as well as on the Hess. This little "cookey" was "done brown" in a small assay-furnace, just for amusement. It is worth $1 35 per ounce, or $11 47 altogether—almost $2 in silver to the pound of rock! The ore was from a depth of thirty feet on the Anglo Saxon. Mr. Herrick intends taking a trip to New York in a few days, but will be back in a couple of months again, to aid in getting the argentiferous stuff smelted out of those huge piles of ore which he has been getting out all winter. We look for a huge hegira thither, and high excitement about Georgetown this coming summer. ..... The *Weekly Times*, of March 5th, contains the following concerning the Adeline lode, which it considers to be one of the best pieces of mining property in Gilpin county. On four east, there is considerable fine-looking iron mixed up with the quartz and dirt, and which appears likely to supersede those materials in a short time, all through a crevice of over three feet. The shaft is well timbered for about forty feet, and is in process of timbering for the balance of its depth, twenty more. There are five other shafts opened on the lode, at depths of from twenty-five to one hundred and ten feet. In a direct line with the Adeline, almost to the top of Quartz Hill, is the Troy lode, discovered in 1863, which is also being worked by Mr. Hinds and his partner, Mr. Ware, both "hardy miners." Under the attractive argument that a walk would do us good, we allowed our hardy friend to persuade us to climb the hill, a "steep ascent upwards." In climbing we had an opportunity of observing that there was considerable work going on, on the said hill. In the distance, Mr. Baxter has a large house over the shaft he is working (we did not learn the name,) we were informed with satisfactory results. Capt. Pritchard, nearer our point of observation, is down 130 feet on the Whalen, said to be "a whalen big lode," and out of which he is said to be, though but recently, getting out rich iron ore, though we do not know in what quantities. We also passed two shafts on the Kansas, one of which was giving out pay quartz, and the other seemed to be just relieved from a "cap." The Troy is most unmistakably a strong lode. Considerable of it is said to have been crushed with very favorable results, but of that we have no definite information. We saw large chunks of the finest-looking quartz we ever beheld alongside the shaft, as well as of iron, a vein of about nine inches of which was struck this week; there is also a streak of about two inches near one of the walls. The iron is very heavy and white, mixed considerably with copper pyrites. It is not that kind that is generally supposed to be rich, but Mr. Hinds assured us it prospects very well in a pan, a circumstance we have had but little experience of, in panning out, but still, unless the quartz is a "gay deceiver," it ought to follow suit in richness. Messrs. H. & W. are working No. 5 west, and are down forty-five feet. There are two shafts east from them, but neither are as well developed ..... The following mining items are from the same paper: Both the Keith and Dubois mills are now running, the former on ore from the Bates lode, and

the latter from the Bobtail. Mr. Sabin is getting out ore from two shafts on the Bates lode, for Keith to run on. From the lower shaft, 189 feet down, there is a strong mixture of fine-looking galena; and from the other shaft the ore is a rich-looking copper pyrites. The chimneys of both of the above mills appear to be much too low, as the air all around them is disagreeably impregnated with sulphurous fumes. In other lands they would shut down on this thing, or else make the mills extend their chimneys skyward..... An assay made from average ore at a depth of eleven feet on the Johnson lode, near Mill City, Clear Creek county, gave at the rate of $118 15 gold, and $49 73 silver per ton. So the owner, Mr. F. F. Bragg, informed us; and he don't usually "brag" much of himself or his property.....In Chase gulch Mr. A. C. Bennett is now working the Portage lode, which he discovered in '64, and from appearances he has "struck it" at last. We were shown specimens of quartz, mixed with pyrites of iron, taken from the shaft which is only eighteen feet in depth, and they showed beautiful wire-gold running through the quartz very extensively. The crevice on this lode is about two feet wide. Boys, would it not be a pious notion to look up some of the old, abandoned prospect holes, and see whether there be not more things 'twixt heaven and this earth's centre, than was dreamt of in your first "discoveries?".....Messrs. Hinds & Shumer have resumed crushing from the Adeline lode, Central City district. They have been timbering up for some time past. The last run from six cords of dirt mixed with quartz, yielded 57 ounces and 13 dwts. First rate result.....Wm. J. Barker, working on No. 5 east, on the Dorchester lode, in Russell district, is now 75 feet deep, and has just let a contract to sink 25 feet more. He owns 5, 6 and 7 east. An assay made by Martine, from ore which had been crushed by Keith, and a fair average taken gave $46 40 per ton. The crevice is over four feet wide, with 16 inches of solid iron.....The King Mining Co. own 3 and 4 east, and have a shaft 60 feet deep. The Discovery and No. 1 and 2 east, are owned by Khuster & Cave, two of our sturdy miners, who have a shaft 80 feet deep, with a splendid crevice of iron. This lode was discovered in 1863, and bids fair to rival our famous ones.....Messrs. Eichar & Co. are working the Colorado Exchange lode, a short distance west of the Dorchester, and have a fine show of iron. Both these lodes are a short distance below the Notaway, and runs parallel.....Miners' wages still keep up to three and a-half to four dollars per day.....The *Times* says that seventy tons of ore per day is being raised from five mines it mentions in Russell district. .....Parties from James Creek say the road across the mountain is passable for man and horse. That new lodes are being made and christened in that district daily; and new houses being built as quick as the saw and axe allow 'em. The news from Boulder, Columbia and Valmont cities is not at all sensational, times in those three burghs being mighty slow for the season. Sanguine drafts are being drawn on the Spring banks, to an unlimited amount, which may or may not be honored at maturity. The furnace is not finished on Jim creek, hence no seads or silver bricks as yet. The saw mill and shingle machine is kept mighty busy, though, and stragglers are coming over from the valley from day to day. They look for lively times in Ward district. Three quartz mills are running in the county at present, and another (the new Ni Wot Co.'s 50-stamper,) will be added before many months more.....The Denver *News* says the snow is forty feet deep at points along Bridger Pass, and thinks the railroad will be inoperative on that route three or more months every year.

Nevada.

The San Francisco *Mercantile Gazette* of Feb. 27th says: In mining shares considerable activity has prevailed since our last issue, and, considering the extreme inclemency of the weather, which greatly retarded advices from the mines, prices have undergone no material change, if we except a few leading claims. Our latest intelligence per mail from Washoe is to the 18th inst. Hale & Norcross is kept out of the market by firm holders; we learn, however, of a private sale of one foot at $3,000. The stock of this company was sold at $1,000 per foot one year ago. Since that time it has advanced to its present enviable position. We are informed that at the annual meeting of stockholders in March next a very flattering report of the condition of the company's affairs will be presented. Savage fell from $1,900 to $1,775, then gradually improved to $1,990, and closed at $1,970. During the week ending February 16th, 1,805 tons of ore were taken from the mine, showing an assay value of $63,509, being an average yield of $35 18 per ton; the previous week the assay value of the 1,182 tons produced was $33 62 per ton. The largest proportion of ore continues to be taken from the Curtis shaft —729 tons coming from that point during the week under review, 673 tons from the seventh station. The second station drift from the Curtis shaft, which is being carried north toward the seventh station in the old works, is said to look well, the deposit of ore being wide and of good average quality. It is also stated that the breasts on the lower station, south mine, look better than for some time past. The Curtis shaft has now been sunk to a depth of 80 feet below the seventh station. Crown Point advanced from $860 to $950, and closed at $915. This company did considerable prospecting during the first half of the present month without any results of a very encouraging nature; however, the mine gives its usual yield of ore from points heretofore developed. The bullion returns so far this month are said to equal those of a corresponding period in January. Yellow Jacket was actively dealt in, but at declining rates, opening at $785, receding to $665, rallying to $720, and closing at $710. This mine produced 1,854 tons of ore from the 1st to the 11th inst., and the yield of bullion during the same time amounted to $19,204 64. During the period embraced between the 1st and 14th of the previous month, three days more than the report of the present month, the ore extracted aggregated 2,780½ tons, and the bullion returns amounted to $41,518. If these yields are to be taken as the product of the ore extracted during the several periods, and the statements give us no other explanation, we obtain a fraction over $10 per ton for the former and $15 per ton for the latter, certainly a very unremunerative yield. Gould & Curry receded from $545 to $510, seller 30, and closed at $510. We learn that work, both at the mill and mine, is progressing very favorably, exhibiting judicious and economical management in every department. Chollar-Potosi advanced from $225 to $256, and closed at $245. Ophir met with favor during the period under review, advancing from $180 to 230, then selling at $209, and closing at $204. Empire sold at $180a190, closing at $177 50. Imperial improved from $170 to $187 50, and closed at $170. The receipts of bullion by this company up to the 17th inst. amounted to about $32,000. The dump at the Alta mine is full, and the ore shows an improvement in quality. The Virginia *Trespass* of Feb. 12th says: The old shaft of the Yellow Jacket company is now being sunk an additional depth of 100 feet for the purpose of opening another level. When this work shall have been completed, the depth of 800 feet will be attained. From this shaft there has been raised more pay ore than from any in this State, and at the lowest (present) level much very rich ore has been mined. When the last level is completed to the ledge we shall expect to see a resumption of some of the "flush days" of the old shaft, for notwithstanding that the affiant on one occasion got terribly scared in a descent with Superintendent Winters and Charley Tozer, yet he has many pleasant recollections of the huge piles of rich sulphurets that he has seen drawn from the ledge, which has made the Yellow Jacket famous.....The Nevada *Enterprise*, of the same date, states that the misunderstanning between the Miners' Union and the Superintendent of the Imperial mine, Gold Hill, has been amicably adjusted. It seems that it was no great matter after all. The Superintendent, it appears, put some men at some common labor in the mine at less than miner's wages, with which the four-dollar men found no fault at the time, but somehow this did not suit everybody, and so the men were discharged. Whether the work is left undone, or men employed upon it at four dollars per day, we have not learned. It is said that "capital is naturally timid" —we believe it "my boy!" Capital must be very timid, indeed, if it is true that the stock of the Imperial fell $10 per share on hearing of the trouble among the miners.....All the mills in Gold and Six-Mile cañons, on the Carson river, and in Washoe, have started up again. The roads are now in very fair condition, and every available team is brought into requisition to haul off the large amount of quartz which accumulated in the dumps during the bad weather.

Pahranagat.—A telegram sent by Henry Raymond to the International Silver Mining company of this city, dated Pahranagat, March 17th, and Salt Lake March 24th, says: Valley mill all here. Mines improving all the time. Everything all right. Mill running this week.....The Salt Lake *Vedette*, March 2d, publishes the following from a private letter dated Silver Cañon, Feb. 20th: Times are improving, and we are coming out O. K. Claims are turning out better than was anticipated, and are being worked brisk. Sebastopol is looking well; also Mary Ann and Nebraska. The New York, Philadelphia, Lansing, Mechanics and Norfolk are good claims. Don't be in a hurry to sell. Congar's mill has arrived and will be put up at Logan's Springs, two and a-half miles from Vance's mills, on the road to Los Angeles. A portion of Raymon's large mill is here; the other mill is doing well. Last week they took out 1,000 pounds of silver, yet the furnace does not work well, as the material is not suitable. Rosmer & Day are hauling quartz to Austin. Be of good cheer, things are all right.....A recent article in the *Tribune* says: The first mill in Pahranagat, containing only five stamps, chiefly for prospecting purposes, began operations in December last. Three other mills are now building. The silver lodes, which lie across and down the sides of the mountains, are reached almost without tunneling, at a depth of from 300 to 400 feet below the summit. They open with so much richness that metallurgists who have analyzed the ores, and practical miners who have seen them crushed in the quartz mills, believe the district one of the most important yet discovered, and likely to equal the great Comstock lode. Timber is scarce, but there is a tolerable supply of firewood. In the valley ten miles from the mines, where most of the reduction works will be built, water is abundant for milling and agricultural purposes. Croppings of rich coal are also found near by. Thus far the settlers obtain most of their supplies from the neighboring Mormon settlements; but Pahranagat promises well for farming porposes. The Central Pacific Railway will run 250 miles to the north of it. The Southern Pacific Road is located about 100 miles to the south.

California.

Calaveras.—The Calaveras *Chronicle* of the 16th says: The mining interests of Calaveras were never in a more flourishing condition than at present, and there will be more gold dust shipped from this country the coming season than for a number of years previous. From the Middle Bar district the news continues highly favorable. Grimm & Co. are still running the tunnel on their lead and obtaining prospects which cannot be beat. The ledge is sixteen feet in width, a streak of five feet of which is remarkably rich. The entire lead, however, will pay an average of $25 per ton. The company has recently let a new contract, upon the completion of which, should everything continue favorable, they will put up a mill. Stewart & Co. are obtaining some very good quartz. Although their shaft is sunk but fifty feet in depth, they have developed one of the most promising veins in the district. They have had a considerable amount of rock crushed at the Middle Bar mill, and it yielded handsomely. Labor is being prosecuted on a number of other lodes in that vicinity, all of which promise well for the future prosperity of their owners. The most serious drawback to the rapid prospecting of the district is the want of a good custom mill, where miners could get their quartz crushed as fast as it is taken out, which would at least enable them to pay current expenses with the product of their claims. No better investment could be made than putting up a mill in that district for the sole purpose of doing custom work. Paying rock enough is extracted to keep it constantly employed, and it would prove largely remunerative as well as materially aid in the development of the mining resources of the district. From the Rich Gulch and El Dorado districts we have the most cheering reports. Bever & Co. and Gleason & Co., at Rich Gulch, are obtaining the most substantial proofs of the extent and richness of their claims—none better are to be found in the county. They are pushing forward work with energy and determination, and the coming spring will find Rich Gulch a lively, bustling mining town. Howell & Co. have completed their bed rock flume, and are actively engaged in working their claim. Judging from their contented appearance and plethoric purses, they are not laboring in vain.

Shasta.—From the Shasta *Courier* of the 9th, we gather the following items: The claim on Portuguese Flat, on the Sacramento River, are all paying well this winter. Several heavy claims, owned by Robert Pitt and others, are being worked to better advantage than usual, on account of the abundance of water, and are yielding the owners handsome dividends. A back channel has been found running almost the length of the flat, and parallel with the river, which prospects very rich. The gravel in this channel is from twenty to fifty feet deep, and expensive bed rock ditches will have to be cut in order to drain the claims.....The quartz ledges on Mad Ox and Mad Mule creeks are attracting some attention at present. McCall, of South Fork, visited these ledges last week, and on examination found several of them to contain good prospects in free gold, but are generally very narrow. Frank Tiffin and L. M. Peck have gone out to explore the locality visited by McCall, and on their return will report.....The mining camp of the French Gulch is represented as being the liveliest place in the county at present. The placer mines are yielding better than usual, and money is plentiful in consequence. Some of the claims on Church Hill are paying splendidly, one company taking out as high as $75 per day.

Santa Cruz.—The *Times* of the 16th says: We have it from reliable authority that not less than thirty-three families have recently settled on the small creeks emptying into the San Lorenzo, and that many others design coming this season. There are many beautiful little valleys in that region, which only require to be explored to ensure early settlement, and when the vast resources of the interior portions of our country shall come to be developed, we confidently predict that the time is not far distant when those sequestered, fertile vales and verdant hills shall "bloom and blossom like the rose.".....The *Sentinel* notices the sale of several pieces of real estate in and around Santa Cruz, at a considerable advance on former prices, and says preparations are going forward for the erection of quite a number of buildings in the spring. The roads from San José to to Santa Cruz are said to be in fine condition.

El Dorado.—From the Placerville *Courier* of Feb. 2d, we learn that the second south extension of the Pacific ledge was discovered and located a few days since on the south side of Weber Creek, by parties who have been prospecting for it for seven months. What is still better, it is wide, well defined, and prospects rich. Indications point strongly in the direction of lively times throughout El Dorado county. The gravel deposits will pay for years to come. In this connection, we learn that a San Francisco foundry

firm closed a contract this week on a claim near the head of Cedar Ravine, for a one-half interest.

Nevada.—The *Gazette* of January 28th says: The Allison Ranch company are putting up a number of the Nortan pans, for the purpose of working the tailings that have been accumulating at their mill for several years. It is expected that the tailings will yield a large amount of gold .. ..We learn that forty pounds of amalgam was cleaned up at the Banner mill, last week, after four days' run..... The Birchville company have struck a rich quartz ledge near the town of Eureka. The company has run a tunnel one hundred and fifty feet, striking the ledge a few days ago, finding the rock remarkably rich, and the ledge of good size.....Mallory & Co., of You Bet, had a splendid clean-up from their cement mill this week. The company are in high spirits over their prospects. .....Brown Brothers made a brick of $2,100, the result of five days crushing of cement.....Mines are live at North San Juan. Water for the miners is abundant, and more companies are at work in the vicinity of the town than at any time for some years back. Nearly all are doing well, and it is expected that the gold yield of the township for the present season will considerably exceed that of last year.

Placer.—The Golden Rule company, says the *Herald*, Feb. 23, were to start their mill at Stewart's Flat again this week. They have been preparing to work the sulphurets from their rock. A fine roasting furnace has been erected, and other improvements made since their mill was stopped. We hope to yet hear of good yields from their rock. When the ledge was first discovered it yielded well in free gold. .....Mentioning the Canada Hill quartz mine, the same paper says: This quartz vein was discovered a few years ago by some Mexicans, and has recently come into the possession, by purchase, of a company of Americans, some of whom reside at Iowa Hill, who sent down several tons to be crushed at the Golden Rule mill, at Stewart's Flat. The rock yielded $23 in gold to the ton. The ledge averages about four feet in thickness, and the rock crushed was taken indiscriminately from the lode. The owner has a fortune.

Alpine.—The infant mill of the Alpine mill and mining company, says the *Miner*, Feb. 16, has this week worked ores from two different mines in this vicinity. The first was from the Mowyer, near the west side of the lode, not considered rich, but as the superintendent wished to test all parts of the vein, he had it worked to know the average. The ore was slightly roasted after crushing, and amalgamated in a Freiberg barrel, and produced $21 per ton in gold and silver, mostly the latter. The other lot was the refractory ore of the Leviathan, which it is believed will be like that of the Morning Star, more profitably worked by smelting. After crushing it was roasted, and all but two pounds worked in barrel. To test the matter thoroughly, two pounds of the pulp was worked by hoe pan process, in a mortar, one pound of quicksilver being used, and the product astonishes even those who were aware of the richness of the ore; it is a ball of crude amalgam weighing 13 ounces avordupois. The lot worked by Frieberg barrel is at this writing in such a state that it is impossible to arrive at anything definite as to the amount; the iron scraps used are covered and, like the first working of Morning Star, by Uznay, the copper has played the deuce with the amalgam .. Mentioning the Tarsish Co., the same paper says: This tunnel is now in about 490 feet, and is timbered up in good shape. A survey will be made in a short time for the purpose of finding the exact distance to the first main ledge.....Nothing definite is known here as to what the Morning Star company will do, or when they will do it but it is thought that the next operation will be to smelt the ore, the works to be erected at Mogul.

Washington.

From the Walla Walla *Statesman*, of Feb. 28, we obtain the annexed items of intelligence: A miner named McMillen, just down from Big Bend, brings favorable reports in relation to the new mines. Bill Sanders, one of the shareholders in the Black Hawk company, had sold out his interest for $1,600. Mr. Bents, Westminster, was the purchaser. The miners at work in their claims were doing well, and all were sanguine of a big thing the coming season.....We have advices from Kootenai to January 3. Up to that time the weather had been fine and little or no snow. Some of the miners were still working. A new mining camp had been struck at the mouth of the Kootenai river which promised well. Reynolds, the express messenger, arrived at Kootenai the latter part of December, and reported having found on the way in a man (name unknown) who had perished from exposure. He also found on Fort Sheppard Mountain, between Flat Bow Lake and Pen d'Oreille river, a man named Stronach, who was almost gone in. The Kootenai miners were preparing to commence operations early in the spring, and calculate to get out any quantity of treasure A Colville letter, dated Jan. 29, has the following: No mining news whatever. As to the location and route to the new diggings, I would state that, as near as I can find out, the Kalispel, or Pen d'Oreille mines are from twenty-five to thirty miles below the old Kalispel Mission, which latter place is about forty-five miles from Colville, traveling east. From the course of the Pen d'Oreille, this would bring the mines within thirty or thirty-five miles of Colville, and in a northeast direction. At present there is no road leading direct from Colville to the mines, but just as soon as our people ascertain that the mines will pay they intend to cut out a trail. The present traveled route is by way of Colville; thence to the Kalispel (a pretty good trail), and from there take boats to the diggings. It is not practicable for pack animals to go down the Pen d'Oreille from any given point above the old Mission, except in the fall of the year, when the swamps are dry. In conclusion I have to say that although nothing is known with certainty in regard to the new mines, it is confidently believed that they will prove rich.....The Walla Walla and Touchet rivers have been very high during the past week. Packers camped along the streams, and farmers living on the same, have all been washed out. Mr. A. D. Pambrum, living about seven miles east of Wallula on the Walla Walla, was taken by surprise, and lost almost everything, hay, produce, wagon, plows, hay cutter, and a large assortment of household and kitchen furniture, including his library of books and his papers. The water reached the top of the front door. He is now camped on the hill on the north bank of the river overlooking the ruins. Mr. Goodwin, living about two miles east of Wallula, on the Walla Walla, fared about the same way. At last accounts his family were camped in a new corral, about one hundred yards north of his house. The river was never known to rise so fast, nor to attain so high a point. The Columbia rose about four feet, caused by the running out of the Yakima. The Snake is just beginning to rise; the Northern Columbia has not moved yet. High water is the order of the day. .....We learn from Mr. S. L. Gilbreath, just from the vicinity of Luck & Longe's mill, that the damage done during the late freshet will not amount to over one thousand dollars. The damage consists in the wetting probably some five hundred bushels of wheat, and the breaking away of the head and tail races. He also reports that the bridge on the Touchet, at the crossing of the Lewiston road, was carried away, together with several small bridges above. Mr. Wait, six miles lower on the Touchet, reports that his loss will not exceed $300, and is confined mainly to the breaking away of his dam. The bridge over the Touchet, at the town of Delta, weathered the storm, and is in good condition. The freshet did not extend to the streams beyond the Touchet, consequently the damages are less than was expected. The Pataha scarcely felt the freshet, and the same remark will apply to the more distant streams. We have already stated that the bridges on the lower Touchet were washed away, but beyond these we have no damages to report. Mr. Wait informs us that the water in the Touchet on Thursday of last week was higher than was ever before known, but notwithstanding the unprecedented rise, the damage was comparatively trifling.....It is understood that large numbers of persons are now in San Francisco, waiting until they can ascertain that the roads and means of communication in the northern country are open, and who propose at once to start this way. For the information of this class, we state that never has so mild a season been known in this latitude; that the roads leading to the mining camps are all open, and that the journey can as readily be made now as in the months of May or June. For several days back we have noticed pack trains thronging our streets, preparatory to the spring trade, and already, as we are apprised, quite a number of trains are on their way to the mines. The excitement this season, without doubt, will be in relation to the Lemhi mines, and to those who are disposed to try their luck in these diggings, we have to say that the various routes leading in that direction are open, and that persons leaving San Francisco at this time will experience no difficulty in reaching the mines. Having, literally, had no winter, the spring opens unusually early, and to those who are bound for the northern country we have only to say, that any further delay is useless, and that those who come first will have advantages over those who lag behind.

Oregon.

According to the *Oregonian*, the exports of treasure from Portland, during the year 1866, so far as is known, amounted to the following sums for each month:

January	$ 539,000
February	390,000
March	438,000
April	391,000
May	472,000
June	715,500
July	952,000
August	1,096,000
September	1,113,500
October	868,800
November	1,275,800
December	961,000
Total	$8,612,600

The same paper contains the following items: Mr. C. H. Seeley, Superintendent of the La Grande Co.'s works in the Gem and Buck ledges, showed us yesterday some specimens of quartz from each of those mines. That from the Glen was taken from the shaft at the depth of 60 feet, is a beautiful piece of rose quartz, in which the gold is plainly seen with the naked eye, and is said to prospect over $1,000 to the ton. The specimen from the Buck, taken from a depth of 60 feet, is similar in quality of rock, perhaps a little finer and harder, but shows no gold. It, however, prospects $60 per ton at any part of the shaft. The company has about 75 tons of rock out, from the Gem, and over 130 tons from the Buck. The mill—five stamps—is not running this winter, the water having frozen up. Work with the mill will probably be resumed in March. The company is now negotiating with the Iron Works in this city for five more stamps.....Mr. S. J. Carter, of Portland, has received some gold dust from placer mines recently discovered about 70 miles south of Auburn, Oregon, between the head waters of the Malhuer and Burnt river. The indications are that the district is a large one; but unfortunately it has no water during the summer season, and the placers can, therefore, only be worked while water can be obtained from the melting snows. Twelve men are now engaged in getting out dirt preparatory to a run of snow water. Mr. Carter has had the dust assayed and finds that it is 830 fine and worth $17 per ounce.....We have seen a letter from a very reliable gentleman, to a friend in this city, in which he speaks of the exciting news from the lately discovered Lemhi mines. The writer of the letter was informed by the person who discovered the mines, that five distinct camps have been established within a distance of four or five miles of each other, in any of which a miner can make from five to fifty dollars per day. The discoverer came down to Slate Creek and with his partner immediately returned .....The Lewiston *Journal* gives the following concerning the Elk City mines: The mines of the Elk City region have kept up their reputation during the past year, and those conversant with their continued prospects seem confident that they will not become exhausted for many years. Business there during the winter is dull, as a great portion of the miners of that camp spend the winter in the lower towns. Some valuable quartz leads have been discovered there during the past season. Assays of ore have been made in this place with the most satisfactory results. We mention the following leads: Stintz vein, 2 feet wide, silver bearing, situate on Gold Hill, 1½ miles west of Elk City. An assay of this ore showed $800 per ton. Uncle Sam vein, 1½ feet wide, gold bearing, situate a half mile east of Elk City. Assays from $600 to $1,300 per ton. Nez Perce vein, 1½ feet wide, gold bearing, situate 2½ miles southeast of the town. An assay of the ore showed $70 per ton. Newsome Creek and Clearwater Station are each gold mining camps, and together with Elk City will be extensively worked next season. All the above camps are in Nez Perce county, and add no inconsiderable amount to the business of Lewiston, their mart for trade..... The recent discoveries at the head of the Palouse, are promising well. The gold is worth over $18 per ounce, and is coarse. The climate of the diggings is much more mild than at other camps east of us. About 76 men have their winter quarters there, and will be able to work on their claims much of the season. Confident hopes are entertained that the mines in that vicinity will become highly remunerative the coming season..... The Shoenbar Mill has been running steadily for three weeks, with a fair prospect of continuing profitably without further interruption; fifty tons of Silver Cord rock was first worked—the amalgamating being done by Mr. Shoenbar, and with satisfactory results. Mr. S. is fast gaining the reputation of a No. 1 amalgamator, as we have always believed him to be. Early this week the mill started on Whiskey gulch ore. We are informed by Mr. Agnew that he has a contract by which he is to receive ten tons daily from this mine. This will ensure the steady running of the mill, and the mine is so convenient as to make it an easy task to keep the road open—no matter how rough the weather. There is little question that if mining and milling become separated and made different branches of business, prosperity will increase with surprising rapidity. Each are as distinct in their character as the producing of wheat and manufacturing it into flour. Whenever a farmer believes, and acts upon the belief, that he can make more cash by building grist mills to grind his own grain, he acts unwisely and mostly fails; and the case is not much different in mining and milling quartz. The Shoenbar Mill will probably demonstrate the correctness of our position.

Montana.

The Virginia City *Democrat*, Feb. 21st, says: The Postlethwaite mill (Summit district,) made another clean up on Sunday morning, from a run of seven days and a half. The rock crushed was from the Kearsarge lode, about 100 tons; the yield was $3,996, equal to about $5,000 in currency. The blanket tailings, which average $8 per ton, are not included in this result. $650 will pay the entire expenses of the mill and mine per week.....The present large yields from the few quartz mills now in Montana has demonstrated the richness of the quartz taken from the various developed leads. The mills which are now being used are small and deficient in many respects. They may be regarded as mere machines for experiments. When mills of the right character and capacity are brought here, the results will show that Montana

is far ahead in minerals to any locality in the world. We learn from good authority that a large number of first class mills will be brought to the Territory the present season. We anticipate a good year for all kinds of mining occupations. Highland will be a good camp so soon as spring opens, and the work will be extensive in all the gulch claims. Ditches have been brought to every gulch which has heretofore paid. There will be no scarcity of water as heretofore.....

A letter from Mill Creek, Feb. 4th, says: The quartz mill of Mr. Branham will be in operation as soon as spring opens, and another mill will be in operation on Indian creek, under the direction of Mr. Phillips. New mines have been opened on Wisconsin creek, which are said to be rich, prospect sixty cents to the pan, twenty-six feet to the bed rock. A new discovery has just been made on Horse creek which is said to be a "big thing," prospects forty cents to the pan, seven to nine feet to bed rock. There is now a company sinking a bed rock ditch on Mill Creek. Two years ago sixty cents to the pan was obtained one mile below the crossing. Persons seeking for either agricultural lands, or mineral ground, can find no better prospects than Mill Creek presents.....The Helena *Herald*, Feb. 21st, says of the Whitlach Union: Each successive week rolls in its thousands of dollars of the king of metals, from this prolific quartz mine. There is no falling off in the richness and abundance of the ore, but on the contrary, the vein is becoming still better defined, and thicker and richer, as the several shafts are continued downward. On Fridays imperfect clean up, the Turnley ten stamp mill yielded from six days' run on 90 tons, the sum of.....$6,328 00

The Hendrie mill, running the same time on second class rock, yielded..... 4,392 00

Total.....$10,720 00

which amounts were taken from the batteries alone, or in other words, is the result of a partial clean up..... Mr. A. J. Lamb, a practical miner of this vicinity, and who, in connection with his partner, owns a number of very good leads in the New York or Trout Creek district, has received a late telegram from his partner now in the East, to the effect that he had succeeded in negotiating for a complete fifteen stamp mill, which he would bring out with him by the first steamer up to the Missouri in the spring; and which mill will at once be put in operation in the already busy camp at New York.....A correspondent writes from Atlantic City, Feb. 18th: On the 11th inst., Mr. Perry, of the Upper district, struck not only the old channel of the creek, but a bigger thing than has yet been found here. Prospects of from $4 to $10 to the pan right along. This is the first time the channel has been found in the gulch, and the results are highly encouraging. I will report in a few days full particulars. There are between 250 and 300 claims, in this immediate vicinity, including bar and gulch diggings Comparatively few of these have as yet been prospected, owing no doubt to the amount of labor required to drain said claims .....A Bannack correspondent of the Virginia *Post* says: One year ago Bannack was a quiet, little mining camp, struggling for existence. There was but one saloon in the place, and three little stores. The stream of immigration was northward and eastward—all from Bannack—and for three years there was not a hurdy-gurdy house in the place. All these things are now changed. The tide is beginning to flow back; and every day we see new ripples of the immense stream of "irrigation" that will shortly set in, via Bannack, for the Salmon river mines. Several parties that came in from Helena, Virginia and other camps, a few days ago, made their exodus for Salmon river with hand sleds. Daily new parties are arriving, while others are leaving for the new mines. The trail, we believe, is yet passable for horses, as we observed Moore's express start about four days ago. The news from the new Eldorado of the Rocky Mountains is very satisfactory, and we predict that Salmon river will be the largest mining camp in these mountains the present season. Ten days ago, a party with hand-sleds started up Grasshopper on a prospecting tour. It is believed by good judges that there will be a good camp at the headwaters of this stream. Indeed, it is mooted that several men have been secretely mining in that locality since last fall, and that they have a "big thing." Time, the disposer of all things, will soon solve the problem. When we get the facts from our own prospectors then we will give the public the benefit of them; but, in the meantime, will write you no falsehoods, nor venture any predictions. Bannack will be greatly benefitted by the Salmon river trade and travel. We expect lively times here in the spring in view of these things, and the signs already foreshadow it .....The weather is genial and mild, the snow gradually disappearing, and everything now promises us an early and lively spring. .....A Rochester gulch correspondent writes, under date of Feb. 17th: Rabbit district claims her share of the hidden treasures of the earth. A number of lodes have been discovered in this district, and, as a general thing, yield satisfactory prospects to their discoverers. The richest lode discovered in the district is the "Watseka." At a depth of twenty feet the crevice dirt yields $1 25 to the pan. The lucky discoverers of the "Watseka," Messrs. Mathuss & Powers, think that such prospects ought to satisfy any person. The above named gentlemen are making arrangements to have a mill put up on their lode early in the spring, and have no doubt but that it will bring them rich returns. Rochester gulch, which occasioned a big stampede, last October, is *still here*, awaiting warm weather and "ye honest miner" to unearth the buried richess. Every indication tends to show this will be a good camp. At any rate, the quartz will compare favorably with the best.

Nevada.

Humboldt.—The Humboldt *Register*, Feb. 23, says: Work on the American Basin company's mine is still being prosecuted with great vigor, under the management of its efficient Superintendent, T. G. Negus. Their tunnel is now in over eight hundred feet. It is handsomely constructed, and is a credit to the skill and energy of Mr. Negus as a mining engineer. For some time past the tunnel has been running in what is called vein matter, similar to that found superincumbent on the lower wall of the De Soto mine. The vein matter, between the lower and upper, or west wall in the De Soto mine, was something over seventy-five feet in thickness, and in the original Sheba one hundred and fifty feet. In both these mines the heaviest deposits of pay ore were found close to the upper or west wall. Since passing into this vein matter many deposits and small seams of first class ore have been cut, but it is not until the neighborhood of the head wall is reached that the heavy deposits of metal are expected to be found. It is hoped, and may be reasonably expected, that at the great depth attained on the ledge by this company, the ore of the vein will be concentrated in larger and more compact masses than was found in either the De Soto or Sheba mines. Adjoining this company's property on the south is the Phœnix company's claim, consisting of eighteen hundred feet on the same series of ledges. This mine is also in the hands of a New York company. But, notwithstanding their location is equally favorable for development, work has been suspended for some time. We are pleased to learn that as soon as the American Basin company have fully exposed their vein, this company contemplate resuming work in earnest, as then they will know exactly how to proceed without loss of time in opening their mine.

Canada.

From the Quebec *Mercury* we glean the following concerning the Chandiere mines: The Inspector for this division reports officially, on the 3d inst., that during September, owing to the heavy rain, bat little alluvial mining was carried on. During October more mining was done; about fifty men were at work on lots 16, 17, 18 and 19 in the river Gilbert, and a considerable amount of gold was taken out. Holders discontinued their mining during the latter month, owing to the excessive flow of water in the pits and shafts from the previous wet weather, and preferred waiting for the completion, when it is supposed that from two thousand to three thousand miners will be at work. In the meantime a newly patented steam pump is about being put in operation. The interval of temporary cessation has been turned to account by the miners erecting log houses over the shafts. Portions of the DeLery company's crushing machine have arrived, and the remainder being expected shortly, the mill will be adjusted and put into operation. Out of the Seignory of Rigaud Vaudreuil, nothing beyond prospecting for quartz had been done. From private information since received from the Inspector, it appears that the whole of the mail above referred to was expected to be up last week; that the weather was splendid for mining and the roads good.

COPPER.

Montana.

HELENA, MONTANA, Feb. 18, 1867.

EDITOR JOURNAL OF MINING:

SIR—One of the most remarkable features of Montana is the immense mineral wealth that lies buried within her territory. Districts are everywhere found that can boast with truthfulness of valuable ledges, carying gold, silver and copper-bearing quartz of varied richness and in the greatest abundance. Among the later discoveries of copper ledges are those in what is called the Muscleshell mining district, situated in the same lattitude as the famed mines of Lake Superior, on the head waters of the Muscleshell river, about eigty-five miles east of Helena, and one hundred and twenty southwesterly from the confluence of the Main river with the Missouri. This district embraces the head waters of Deep creek and the Muscleshell, which are separated by a low divide, both streams being tributary to the Missouri, though debouching into it at least three hundred miles apart. It is entirely surrounded by spurs from the Belt range on the south, and by the range itself on the west, while on the north and east the Little Belt range forms a crescent, either end of which would join the main range, or its spur, were it not for the deep canons preventing. The basin thus formed is about forty miles long and from five to ten miles wide, and is evidently the bed of an inland sea, connected with, or perhaps tributary to, the vast ocean that once swept across the continent, bounded only by the two grand chains of mountains on either side. The valley of Deep creek is nearly level—sloping gradually from the north and east; while in the valley of the Muscleshell the surface is somewhat broken, though not abrupt, presenting the appearance of a rolling prairie, across which, in an easterly and westerly direction, and bearing about 10° north of west, the ledges can be easily traced. These slight elevations, composed chiefly of a slate formation overlying compact limestone or granite, are apparently formed by the subsiding floods washing away whatever deposits may have accumulated around these slight upheavals, and exposing the "croppings" of the ledges in question. Below these ledges, or at the canon, compact limestone is shown in huge masses, and on the foot-hills of the Little Belt range, nearly east of the ledges, and across the stream, the granite crops out boldly. The surface near and adjacent to the mines bears every indication of having been submitted to a heavy wash, completely uncovering the ledges in places, removing superincumbent deposits, carrying away every particle of alluvion, and depositing it in the narrow bed through which the middle fork of the Muscleshell makes its way to the canon. About seven miles below this canon another belt of leads crops out, running north and south, showing at the surface large bodies of the pyrites of copper, carrying, by assay, gold and silver to the amount of fifty dollars per ton. That the ledges in the upper district are by far the most extensive and valuable yet found in the Territory, can be abundantly proved by careful assays, made by different assayers, all perfectly reliable, both here and in the States; by the testimony of practical and experienced miners, well versed in the detail and working of copper ores; by all the surroundings so favorable to the experienced eye; by indications that scientific men point to with satisfaction, and almost insure success; and, finally, by the ledges themselves and the results already made known.

The "croppings" average from three to six feet in width, and in one instance, on the "Great West," are no less than eighteen feet, and on the summit and side hills of three of the ledges show particles of *native* copper plentifully sprinkled through the green carbonates and quartz forming the body of the ore. The main ledge, and the only one in the district developed to any extent, is a most remarkable one, and immensely rich in the most valuable of the copper ores, viz.: red and black oxides and green carbonates. As yet, no pyrites or sulphurets of copper have been found in this ledge, though the shaft on it is now about forty feet deep, and exposing a body of ore at that depth, about six feet wide, principally black oxides with rich seams of green carbonates. The croppings are about six feet wide, and at the discovery shaft specimens can readily be found crarying from 50 to 70 per cent. of copper. At a depth of four feet the ledge is about three feet wide; rich seams of the red oxide and native copper are found from an eighth to a half-inch in thickness, completely enveloped in and permeating in every direction, the Gangue, which is a flesh-colored substance, quite hard, and having a glistening and somewhat waxy lustre. Large pieces of this quartz weighing over one hundred pounds, were taken from this ledge, which, when broken with the sledge, would show innumerable veins of copper, almost pure, completely filling the little fissures, made, apparently, by the intense heat, sufficient to smelt the ores below. These seams gradually worked toward the walls, and at a depth of ten feet, where the ledge becomes well defined, and about four feet wide, run into layers of green carbonates, from two to three inches thick, which show under a strong glass, and even to the naked eye, particles of native copper throughout the body of the ore; while in the centre of the ledge broken quartz, with a few scattering particles of red oxide, predominated; at a depth of twenty feet the ledge is some six feet wide, and is assuming more solidity, carrying the red oxide and green carbonate, mingled with small bits of quartz and a talcose slate, forming a compact body, entirely filling the ledge. The shaft is now (Feb. 18, 1867,) about forty feet deep, exposing a vein of ore six feet in width, composed chiefly of the red and black oxides, with the seam of green carbonate about fifteen inches wide, and so compact that the miners are obliged to blast.

The remarks made above in regard to the main ledge, may apply to most of the others in the same district, though they do not show so remarkably at the surface; the croppings are, however, of the same character, containing in many instances pyrites of copper-carrying a paying quantity of gold and silver; they will undoubtedly prove valuable when further developed, though sufficient work has been done on them to confirm our expectations in regard to their value. From the manner in which the main ledge develops, there can be no doubt of the trueness of fissure, and consequent permanency of the veins in this district. From the geological indications cited above, we judge that the slate formation overlies either compact limestone or perhaps the granite itself, and the veins, instead of following the cleavage of the slate strata, break directly across them at nearly right angles, the inclination, a few feet from the surface, being about 15°, and dipping towards the north; while at a depth of twenty feet, the ledge is assuming a perpendicular, departing from it about 10°, and gradually widening, the laminæ of slate, showing in distinct lines, on the walls, which are quite smooth and regular. An assay made here showed very favorable results. The quan-

tity of ore used—ten pounds—was selected from a ton or more, and was not picked or dressed, the average ore being taken, rejecting the rich seams and heavier specimens, and with this strict test, the results were most flattering. The ore yields as follows:

No sulphur present.		
Copper, 33 per cent.,		
Gold, per ton of ore	$40.00	
Silver, " "	6.00	$46.00
Add value of copper, 33 per cent. 660 pounds at 25 cts		$165.00
Making a total value of one ton of ore		$211.00

The ore producing the above result was taken from the shaft on the main ledge, then only twelve feet and was a fair, average, working result, not merely an assay. Several discoveries have been made on the main ledge, and the shafts sunk on it are from twelve to twenty feet in depth, and more than four thousand feet apart, showing a striking similarity of favorable indications, the crevices, at either shaft, being from four to six feet wide, and identical in their bearings, inclinations and showing of ore. Other ledges in the same district can be traced in the same manner, as many as eight discoveries having been made on what is supposed to be the same ledge, crossing the main one at an angle of about 25°, and showing at places quite as favorable indications. There are already about fifty ledges discovered, and the district has already acquired more than a local reputation. There is the greatest abundance of wood and water in convenient proximity to the mines, and very strong indications of the existence of coal within a mile of the ledges, and also of immense masses of steatite, which would be of immense value in lining furnaces, any quantity of which can be obtained at the expense of digging and hauling. The road of the Rocky Mountain and Missouri River Wagon Road and Telegraph Co., passes directly through the district, affording an opportunity of hauling ores or metal for shipment to the Missouri river. Below is a statement of the anticipated working of ores from these mines, based upon accurate assays and working tests, liberal allowances being made for expenses and labor, and a minimum value placed upon results expected to be obtained; it will be observed in the estimate made, the value of the gold and silver is entirely ignored, and our statement based upon the lowest valuation of the copper only. The precious metals will increase in quantity as the ledge is developed; 30 per cent. ore worked for 300 days, at the rate of five tons per day, will in one year amount to 1,500 tons. Profits on working these 1,500 tons of 30 per cent. ore, worked for 300 days, and sold at 25 cents, can be estimated from the following table:

Say it cost to extract ore from ledge, $3 per ton		$ 4,500 00
" " smelt, $10		15,000 00
Thirty per cent. ore yields 450 tons copper, and to ship to New York costs $120 per ton		54,000 00
Total		$73,500 00
450 tons copper sold at New York, at 25 cents	$225,000 00	
Deduct expenses above	73,500 00	
One year's profits		$151,500 00

Ores can readily be obtained that can be dressed into classes, of 50, 30, and 20 per cent., and the average of chippings, with ores carrying less than 20 per cent., will form a class, yielding as much as 10 per cent. copper, which could be worked to advantage where the present high rates of labor are reduced. The above is a true and correct statement of the situation, development, and resources of the copper mines of the Muscleshell, and can be substantiated by facts. The mines are open to investigation, and nothing would please us better than to have good, reliable, and practical persons, sent to inspect thoroughly and report upon what they can see. We invite the attention of capitalists to our mines, and feel confident that handsome results could be realized on capital invested.

Michigan.

The Houghton *Mining Gazette*, March 14th, gives the following as the February product of Portage Lrke mines: Calumet mine, mineral, 140 tons 505 lbs.; Hecla mine, stamps 113 tons 1776 lbs., barrel 4 tons 400 lbs.—total 118 tons 400 lbs.; Pewabic mine, mass, barrel and stamp, 90 tons 270 lbs.; Quincy mine, stamp, barrel and mass, 89 tons 630 lbs.; Huron mine, mass, barrel and stamp, 85 tons 1391 lbs.; Franklin mine, mass, barrel and stamp, 75 tons 600 lbs.; Shelden-Columbian mine, mass, barrel and stamp, 48 tons 1468 lbs.; Isle Royale mine, stamp, barrel and mass, 30 tons 248 lbs.; Grand Portage mine, stamp and kiln, 25 tons 1874 lbs.; Douglass mine, barrel, 6 tons 000 lbs.; Portage Lake district. Total 706 tons 560 lbs. The Shelden-Columbian made no return for January, the agent informs us, for the reason that starting the new stamp, etc., did not allow them but two or three days running time with one head.....The same paper says: At the Huron about seventy-five men have been discharged during the past week. This is a great reduction for this season of the year, and excites general comment. We refrain from any criticism lest our remarks be construed as uncharitable..... At the Kearsarge nothing particularly new has been found during the past week. The north pit has reached the belt, but only a moderate show found. Two pits, six hundred feet north and south, have been started, but no rock reached at last accounts.....At the Schoolcraft work in the discovery pit has been suspended, owing to the great prevalence of water. There is no doubt that the amygdaloid found is the hanging wall of the conglomerate, for that, too, was found before work was stopped. The heavy copper was found in a streak about ten inches wide; some copper is reported in the conglomerate, but it was not broken into or exposed much.....At the Huron the fifth level is extended about forty feet west of the winze sunk between Nos. 1 and 2 shafts. For the last twenty feet the lode has shown very good in character and productiveness, exceeding appearances above or around it. No. 2 shaft is in course of sinking to this level, and will probably connect by June. Now the shaft is but ten feet below the forty in a lode more than ordinarily rich. The second level is opened sixty feet west of the winze, west of No. 2 shaft, in good ground. Between the end and the shaft, three parties of men are stoping the back with good results, the lode producing finely of small masses, stamps and barrel copper. In the back of the deep adit level there are four parties of men engaged in stoping; three between Nos. 2 and 3 shafts, and one west of the latter. That nearest the former is quite rich in all the grades of mineral, and the others are in a good paying lode, though not as much heavy metal showing. East of No. 3 a winze is sinking to the second level to allow stoping to proceed without delaying other work. This level is in west from No. 3 about fifty feet in a strong, rich lode the entire distance. Another party are drifting east from No. 4 shaft, the lode showing good stamp and barrel work. In back of shallow adit, there are three parties stoping, all in good, rich ground, producing small masses, barrel and stamp work. The working force of this mine will be increased considerably next month.....At the Knowlton the fourth level is opened east and west of No. 2 shaft about forty feet. In the west drift the lode is not very rich, but east a fair lode is showing. It has intersected the large cross-course, most of which is good vein and carrying some heavy copper. The third level is opened east of No. 2, one hundred and fifty feet, showing some good stoping ground. West of No. 2 shaft the backs above the third level are pretty well spent, but have been quite productive. West of No. 1 shaft—which is now sinking as a winze—there is one very good stope in the same run of ground opened in the level above. No. 3 shaft is sunk some thirty feet under the second level in a fair stamp vein of good width. East of No. 2, in the fourth level, as near as we can make out, the drifts are in one hundred and twenty feet, the greater portion of the back still standing, and apparently a paying lode.....At the Caledonia the order to reduce the working force, spoken of in the *Miner* last week, has been withdrawn, and the captain is now working thirty-six miners. The new cross-cut on the Champion lode will be connected by the 1st of May. The men are rising and sinking at each point. They are sinking the old Butler shaft as a winze to connect with No. 1 cross-cut. The lode in and over the old deep adit west is looking very good, with mass copper, showing at half a dozen places.....The Ontonagon *Miner*, of March 15th, says: We learn that the Sheldon-Columbian mill ran most of last month on rock culled from the old burrows, hence the product for the month was only about thirty tons. They have a large extent of lode open in the mine, much of which is of the best character, but they were not in shape to stope last month to advantage, and clean up around the burrows. We noticed when there a few weeks since, some very rich samples of silver rock, chiefly from the north part of the mine, from which we judge that the portion of the lode nearest the lake shore, is in some places unusually rich in native silver, enough so to warrant the procurement of simpler and more effective means for its separation from the rock and copper than is now in use .... A belt of rich amygdaloid, supposed to be the overlying belt at the Calumet, has been discovered on the Kearsage, also some rich conglomerate, which may be in place and may not.....The new machinery at the Isle Royale mill, probably started again this week, but we have not heard from its success. Having never seen the Chilian mills—on which this simply claims to an improvement—work, we have preferred to make no speculations, *pro.* or *con.* on the subject. Those who know much more of that machinery and its success in pulverizing ores, believe it will succeed in this country, and we can see no reason why it should not. The weight of metal in each wheel, nearly eight tons with the rigging, passing over small fragments of rock of half inch cubes, or less, ought to crush them to atoms, and from experiments made some weeks since, it is highly probable they will do so.....The very favorable appearance of the Mabb's vein at the Isle Royale, noticed some weeks since, continues unabated. Our first look at this vein, two years since, satisfied us that it was the best defined and would prove one of the most productive in the district..... Capt. Uren's slime washers are now doing excellent service. We are informed that two of them will dress the finest slimes up to 50 or 60 per cent. copper.

Arizona.

The San Francisco *Press* says of the Great Central copper mine, at Williams' Fork, near the Colorado river. The company have two small furnaces running, turning out copper from 91 to 95 per cent. fine, which is being shipped to this city. A large lot of this copper was received a few days since, which has been sold for fifteen cents per pound—$300 per ton. The cost of delivering such copper here is a little over $100 per ton. The company have two more shipments on the way, both of which amount to about 30,000 lbs. Regular shipments will be made hereafter. The ores of this mine are oxydes and carbonates, very little or no iron or sulphur being present; hence the company is able to turn out at one smelting a very good article of copper. Some of this copper has been used by the brass founders of this city, who have pronounced it a very fair article for many commercial purposes, just as it comes from the furnace. Within less than two months they will have a larger furnace in operation, which they think will be able to turn out from three to five tons of copper per day. The company own two parallel ledges of 3,600 feet each. Only one ledge has as yet been developed to any considerable extent. Upon this an incline has been sunk to the depth of one hundred feet, at which point there are some indications of sulphurets coming in. At the depth of about fifty feet drifts have been run each way from the shaft about one hundred feet, all the way in good ore—vein varying from five to seven feet thick. The shaft is also connected with the surface by a tunnel through which the ore will be taken out. The outcrop of the vein has been stripped quite a distance, developing good ore all the way. The superintendent estimates that he has fully five thousand tons of ore opened to sight, which will average a yield of 25 per cent.

IRON.

Pennsylvania.

The Pottsville *Miners' Journal*, March 9, says: The amount of black-band ore sent from the McGinnes bed over the Mill Creek Railroad for the week ending on Saturday last was 225 tons; previously, 1,605; total, 1,830.....During the last week this bed of ore has been opened at two other points near the surface, in the Norwegian and in the Mill creek valley. At one point it is twenty inches in thickness at the depth of a few feet, and increases in size as it goes deeper. A large specimen of ore can be seen at the Union League room. It is now ascertained almost to a certainty that the McGinnes bed of ore lies about 100 feet above the Diamond vein, and is therefore confined to the red ash coal measures of this region.....The Pottsville *Standard*, March 9, says: The search for black-band has been greatly interfered with during the past week by the bad weather. Enough has been discovered, however, in different places, to establish the fact that the vein exists throughout this region.....Iron ore has been discovered in several places in the mines and tunnels in the vicinity of Woodside.....A vein of black-band has been opened by Wm. Burton, on the North America, a short distance above Coaquenac, on the road from Port Carbon to St. Clair. It is said to be two or three feet thick.....Messrs. Daniel and Theodore McGinnes are still sinking their slope on the outcrop of the McGinnes vein, about half a mile east of the latter. The slope has been sunk to a distance of about forty feet. The vein has developed its regular thickness of about three feet.....We hear many rumors of the proposed erection of furnaces in different parts of the county, but we have no positive information of the commencement of any of them..... Mining at the McGinnes shaft continues. The amount of black-band ore shipped for the week ending March 2, was 225.19 tons; previously, 1,606.02; total, 1,832.01 tons.....The Mauch Chunk *Democrat* says: The iron business in the Lehigh valley, which had been very dull for a long time, is beginning to revive again. All the furnaces and most of the mills are now in full operation, with a fair prospect of keeping on regularly. This will give fresh activity to all kinds of business in this region of the country. The Pottsville *Standard*, March 23, says: The amount of black-band iron ore shipped over the Mill Creek Railroad for the week ending March 16, 1867, was 157 03 tons; previous, 2,112 14 tons; total, 2,269 17 tons. .....At the furnace of Atkins Bros., Pottsville, the process of calcining the black band ore has been carried on in limekilns, but it is now being calcined in the open air. This process expels the water, of which there is a considerable quantity in the ore, and raises the contents of iron to about 50 per cent. The quantity of carbonaceous matter in the ore is sufficient to effect the roasting. The ore thus roasted is exceedingly porous, and very readily smelted. It makes an iron remarkable for toughness, and closely resembling the Scotch pig.....The Pottsville *Standard*, March 2, says: There is but little to note in the ore line this week. All are awaiting the disappearance of the snow and ice, and more favorable weather for outdoor operations.....Mining is progressing satisfactorily at the McGinnes shaft, the amount shipped up to Saturday last being 1,606 tons 2 cwt.....Some fine specimens of ore have been brought to Pottsville from the Coal Hill tract, near Middleport.....A vein of ore, 14 inches thick, resembling that found in the outcrop of the McGinnes vein at St. Clair, has been found at Eagle Hill by Mr. Wm. J. Kurtz. It is about

two miles east of the outcrop of the McGinnes vein, which is four feet thick, and becomes darker as the distance from the surface increases. It has been worked to a depth of about thirty feet.....The outcrop of a vein of ore, apparently the same as the above mentioned has been found at Wadesville, by Mr. Llewellyn. It has not yet been fully devoloped. .....The Cambria Iron company, at Johnstown, and the Pennsylvania Steel company, at Harrisburg, are now manufacturing by the Bessemer process. The former employs three thousand men. The Pottsville *Journal* of same date says: It is, perhaps, interesting to know what practical developments are now in active progress on what is supposed to be the outcrops of the McGinnes bed of black-band iron ore in several localities, and that discoveries of surface ore, resembling the black-band, have been found extensively in the vicinity. The outcrop ore has a fine brown appearance, resembling a rich brown hematite. It is a per oxide on the surface, and under the influence of the atmosphere, is oxydized to a considerable depth below the surface having none of the peculiar black appearance of the ore *in situ*. The bed, as far developments have yet been made, is soft and ocherous, mixed with rich and occasionally hard pieces of ore from 20 to 30 feet from the surface, depending on the protecting strata.....The Messrs. McGinnes—sons of the late E. W. McGinnes—are sinking at the outcrops at Mill creek, east of the original discovery. Messrs. Llewellyn & Kurtz, in connection with J. S. Patterson, are sinking on what is supposed as the bed at Wadesville, and operations on the same near the Big Tracey are also progressing at Phœnix Park..... Mr. Bast is exploring the bed of carbonaceous ore at Tuscarora, and has cut a fine bed of this ore in a new tunnel. This bed is a rich carbonaceous ore, having nearly the constituents of the black-band, but, unfortunately, it is generally encased in hard rocks, and cannot always be mined with economy, unless in connection with the coal. It ranges from twelve inches to three feet in thickness..... It is stated that the English practice in construction of blast furnaces seems to be going in the direction of increased size and a higher temperature. Dimensions of twenty-five feet at the boshes and eighty feet in height, and temperatures of one thousand and fifty degrees and eleven hundred degrees, are employed, with marked economy and no drawback from the crushing of the charge and "gobbing" of the furnace (*i. e.*, choking with dense mass of material impervious to the blast). The Rosedale and Ferry-hill company are about to blow-in a pair of furnaces, twenty seven feet in the boshes and one hundred and two feet high. The result of these changes has been to reduce the consumption of fuel to so little as twenty-one hundred weight for each ton of pigs made from an argellaceous ore containing thirty-one per cent. of iron.

Oregon.

Relative to the St. Helena iron beds, a correspondent of the San Francisco *Bulletin* remarks: "Here, within the space of six miles, are iron beds, coal that can be used in smelting furnaces, and deep water navigation—facilities which seldom "fall all in a heap," and which are bound some time to make this point one of importance in manufactures, as it is believed the railroad will make it one in commerce. The St. Helen mine has been opened only so far as to test its quality, and to ascertain the thickness of the beds, which, so far, are 5, 6 and 8 feet, quite near the surface or side of the mountain. The iron has never been worked except by the village blacksmith, who has, I believe, manufactured a horseshoe from it, using the neighboring coal in his forge. An iron field similar to this one has been purchased by a company, of which W. S. Ladd of Portland is President. The capital stock of this company is $200,000, and their furnaces are now so near completion that it is expected work will be commenced next July. I quote from a paper by the Superintendent, G. H. Belden: 'The beds of ore which are already prospected and sufficiently developed to ascertain approximately their amount, contain at least 250,000 tons, and are from three-fourths of a mile to two miles distant from the furnace. The land upon which the ore is found in large quantities is contracted to the company, and is contiguous to the furnace property. The quality of the ore is approximately the same throughout the entire district around the furnace, and is found under the same geological conditions on a lava bed-rock, which overlies a basalt, and is itself covered with detritus from the high or basaltic cliffs, and by gravel, clay and sand. The beds (not veins) are irregular in shape and depth, generally inclined at an angle of 8 or 10 degrees, and seem to have been deposited from solution in the irregular depressions of the lava. No iron has been found except underlaid by this lava—a soft and porous rock, easily worked by pick and shovel. The stripping varies from a few inches to 10 and 12 feet; no drifting or timbering will therefore be necessary, but the working of the mine will be by open cuts. The greatest thickness yet found in the beds is about 10 feet, though beds are known of probably not less than 30 feet in close proximity to those most developed. The analysis by Messrs. Kellogg & Heuston, of San Francisco, shows the ore to be a sesqui-oxide: it is as follows:

Sesqui-oxide of iron	77.66	per cent.
Moisture	11.16	"
Insoluble silica	11.08	"
Sulphur and phosporous	0.10	"
Total	100.00	"

specific gravity 4.25, yielding 54.37 per cent of iron.' Charcoal will be used in these furnaces, for which the fir trees that cover large tracts of land adjoining will used for the present. I had nearly forgotten to state that these iron works are located at Oswego, 8 miles south of Portland, on the Wallamet river. I have been told by ex-Gov. Gibbs that equally good iron, i. e., so pure that it is malleable in the ore, can be found in Umpqua county."

Michigan.

The Marquette *Journal*, mentioning the Michigan Iron company, says: This company's furnace went into blast on the 10th of February, and made 75 tons pig iron the first week. The second week it made 95 tons. This week the average will be 14 tons per day. The company had 235 tons on hand Wednesday last. Some of the old furnaces had better work lively, or they will find themselves left behind this new institution when the "adding up" day comes round.

LEAD.

Iowa.

Correspondence from Dubuque, March 12, says: Two promising lead lodes have been recently discovered in this vicinity—one near Fairplay, Wisconsin, by a Chicago company, and another three miles northwest of this city, by the Dubuque Level and Lead Mining company. Mining interests are flattering just now.....The *Times* says: The Chicago company, (Law, Munn & Co.,) who have been at work since last November, with twenty miners, north of Sinsinnawa Mound, and two miles from Fairplay, discovered an "opening" last Friday, fifty feet from the surface—there being ten feet of clay and forty-three feet of caprock. The ore had been followed down some twenty feet with a horse pump, the crevice being filled with a key-rock, with seams of ore on each side. On reaching the opening solid masses of ore could be felt with a crowbar, spreading out in various directions. This is supposed by the most observing miners to be a big discovery—probably the largest that has been made in that vicinity for several years. The Dubuque Level and Lead Mining company have recently found very large ore in an east-and-west vein near the Shot Tower shaft, three miles northwest of the city. The discovery was made by using a hand-pump in sinking in an opening about one hundred feet from the surface. The ore set in, in sheet form, one foot thick. Eight thousand pounds have been raised. Thirty thousand pounds are said to be exposed in the drift. The miners say the prospect is splendid for a big yield—one sanguine man holding that the prospect is as big as the Karrick lode was at any one time, and that vein yielded 7,500,000 pounds of ore. Our lead interests have yet barely commenced to attract the attention which their merits demand. We are paying some $2,000,000 in gold annually for foreign lead. The time must be close at hand when enterprising men and capitalists will begin to see the advantages which this field offers to the mining adventurers—and this amount of money will be kept at home by mining ores from this region. Dubuque should naturally become the mining centre of this lead region, and the business of lead mining alone amounts to several millions of dollars annually. The ore is here, and waiting for enterprise and capital to develope it; and we would say to the capitalists in the Eastern cities, no coal, iron, copper or oil region will begin to pay the same dividends on well directed mining enterprises in this lead region.

Utah.

Speaking of the mineral products of Utah the Salt Lake *Vedette*, March 2, says: One of the most abundant and useful of these metals, and one that is cheaply mined, is lead. There are extensive mines of this ore all about, capable of producing an inexhaustible supply of the raw ore yielding from 50 to 80 per cent. of lead, together with a large percentage of silver. Works for the reduction of the ore, and the manufacture of sheet lead, lead pipe, shot, white lead, and litharge for paint, can be erected at a small expense, sufficient to supply our home demand and for export to our immediate neighbors. Lead pipes, so useful in all countries, more especially in one like ours, requiring irrigation, could be manufactured here and sold at one quarter the price now demanded for the same article abroad, and yet pay remunerative equivalents to the manufacturer. There is scarcely a lead mine discovered in this country that does not produce sufficient silver to considerably more than defray the cost of extraction and reduction, leaving its enormous product of lead as a clear gain in the operation. The consumption of lead pipe for city uses solely ought to keep a good sized manufactory constantly employed. With our abundant and free water, every garden and door plat could be adorned and beautified by its living fountains of pure, sparkling water. Who of our enterprising citizens will be the first to erect an establishment of the kind we have indicated, and reap the rich harvest in store for the pioneer proprietor?

Wisconsin.

The lead mines of Wisconsin are being profitably worked.....Lead worth $7,700,000 has been taken out from two sections of land in Grand county, Wisconsin.

SLATE.

[From our Special Correspondent.]

A GLANCE AT SOME OF THE SLATE QUARRIES IN VERMONT—THE LATE DEMAND FOR HIGHER WAGES—IT IS REFUSED—THE MEN RETURN AT THE OLD PRICE.

POULTNEY, VT., March 23, 1867.

EDITOR JOURNAL OF MINING:

DEAR SIR—The slate production of the East is almost entirely confined to the towns of Poultney and Castleton, in Rutland county, Vt., and the towns of Granville and Salem, in Washington county, N. Y., which joins Vermont. The wealth of these towns arises from the sales of the slate, which is produced in large quantities. The wagon roads are bedded with slate, the garden walks are covered with slate slabs, and the fences are made with the same material. About the taverns daily congregate the slate workers, who discuss the never-exhausted subject of slate and their prospects as connected therewith, and you are surprised with what intellectual vigor they reason upon the questions of labor, supply and demand. At Salem several qurries are in active operation, and their product will be in excess of last season. They promise a fair quality of purple slate. I estimate the production at 5,000 squares. At Granville every four or five hundred yards reveals a slate quarry, made very prominent by their dump-heaps, or refuse slate stone—the imposing feature of a quarry, particularly those at Granville. Several quarries here are making a fair roofing slate, though they have, as a whole, the reputation of being rough, thick and devoid of uniformity in color. I must candidly confess, after personal observation, that it is so. I except the red slate, which are quarried here only. These red slate are very desirable for ornamental roofing in combination with other colors. They must be thus seen on a roof to be appreciated. The total production at the Granville quarries I estimate at 12,000 squares. These figures are apt to be changed according as the demand may be. At Hydeville, Fair Haven (Vt. and vicinity there will be more slate produced this year than the last. The Eagle company, the largest producers in the East, have uncovered (i e., taking off the top rock covering the slate beds) largely. A close inspection of their quarry shows a large body of green slate uncovered, and that the product of green will be in excess of the purple. This company will get out some 15,000 squares this year. The Scotch Hill quarries, located about two miles north of the village of Fair Haven, will endeavor to keep up with any demand, and I estimate they will be able to send off at least 10,000 squares. The smaller quarries, and they are very numerous will all be in operation, and their combined product say 5,000 squares. As usual at this season, the great question of labor has arisen. Some three weeks ago the laborers "struck," demanding $3 per day, instead of $2 75, the old price. Their employers refused their demands, and the men, after holding out a few days, went to work at the old prices. It is a pity these men cannot see more clearly the position of their employers. The latter are not making more than a living profit; in truth, they cannot do more when they have to compete with tin, tar and gravel roofers, who are ever ready to enter the field against what the country lad called "stun shingles." The continued prosperity of the laborer, and the profit of the capitalists, both depend upon *demand*. If that stops, of course the miner's occupation is gone. Besides the roofing slate quarried in the vicinity of Hydeville, there are several quarries actively engaged in obtaining slabs for billiard-tables, mantels, table-tops, and the like. This branch of industry is a speciality. Many men are employed, and they are well paid. C.

Oregon.

The Portland *Oregonian* of Feb. 2 says: Mr. Townsend has made the discovery of a fine variety of slate rock, about two miles from this place. On exposure to a red heat and suddenly cooling, it does not shell off or crumble in the least. Slabs of several feet in length and breadth, and of a fourth or half inch in thickness, can be easily quarried from this ledge. It compares well with the slate used for roofing in many of the eastern cities.

☞ A new process has been patented in France for obtaining a supply of oxygen gas from common air by means of highly oxygenated compounds, such as chromates and bi-chromates, manganates and per-manganates, which, if deprived of a portion of their oxygen by means of steam, have the power of absorbing oxygen again when exposed to a current of dry, heated air. The improvement consists in making the action continuous, by placing in a retort one of the compounds mentioned, and passing into the retort a current of steam. A current of oxygen is carried off and collected into a gas-holder, while the steam is condensed to water. When oxygen has ceased to be eliminated, a current of dry, heated air is forced into the retort. The compound absorbs a portion of oxygen, and is again ready for the action of steam. Thus, by the alternate action of air and steam, the same compound produces oxygen for an unlimited period. The process is said to work with great regularity, and may yet be of considerable importance in metallurgy.

AMERICAN
Journal of Mining.
[ILLUSTRATED.]

WESTERN & COMPANY,
EDITORS AND PROPRIETORS.

By publishing contributions, the JOURNAL OF MINING *does not necessarily endorse the positions assumed by contributors.*

OFFICE, 37 PARK ROW, NEW YORK.

Published Every Saturday Noon.

TERMS:

SUBSCRIPTION.		ADVERTISING.	
Per annum, one copy -	$4 00	One line [Nonp.] 1 insert'n.	$0 30
Six months, one copy -	2 25	One Square, 10 lines, one do	2 00
Three months, one copy -	1 25	One Square, do. four do.	5 00
Single copy -	10	One Square, do. one year,	50 00

Canadian subscribers 25 cents extra for postage.
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DESIGNING, LITHOGRAPHING and WOOD ENGRAVING, and JOB PRINTING Executed in elegant style, on reasonable terms.

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DEALERS AGENTS.
THE AMERICAN NEWS COMPANY, 121 Nassau street, N. Y.
THE NEW YORK NEWS CO., 21 Ann street, N. Y.

☞ Correspondents, exchanges and others addressing us should be *extremely careful* to write "JOURNAL OF MINING," instead of "MINING JOURNAL," to ensure safe carriage.

NEW YORK, SATURDAY, MARCH 30.

Contents of this Number.

EDITORIALS.—To our Subscribers—The Resources of America; her Metallic Wealth; Necessity of a truthful Exponent of her Mineral Resources; how the "Journal of Mining" supplies this want—Back Numbers, etc.
ILLUSTRATED MACHINERY.—Carvalho's Improved Steam Superheater.
ORIGINAL PAPERS.—A New Chemical Nomenclature, by Prof. S. D. Tillman—Amalgamation, No. 6—Electro-Prositive Metals, No. 13, by Joseph Hirsh, Ph. Dr.
SCIENTIFIC MEETINGS.
MINING SUMMARY.—GOLD AND SILVER: Colorado, Nevada, California, Washington, Oregon, Montana, Canada. COPPER: Montana, Michigan, Arizona. IRON: Pennsylvania, Oregon, Michigan. LEAD: Iowa, Utah, Wisconsin. SLATE: From our special correspondent; Oregon.
MISCELLANEOUS.—New Slime Copper Washer—Nuggets—Singular Terrestrial Disturbances—Wonderful Ruins in Siam, etc., etc.
MINING COMPANY MEETINGS—Dividends, Meetings, Assessments, Statements.
MARKET REVIEW—Mining and Petroleum Stocks, Finances, Stocks, Metals, etc.
THE COAL TRADE.—Quotations, Shipments, Freights, Cargo Rates, Weekly Coal Trade Circular.
SLATE TRADE REPORTS.
SPECIAL SCIENTIFIC BREVITIES.
ALL SORTS.
PATENT CLAIMS.

TO OUR SUBSCRIBERS.

As a large number of subscriptions to the JOURNAL OF MINING expired, and as it will greatly facilitate the making out and classification of our lists of addresses for Volume III—we trust that subscribers will at once send on their remittances for the ensuing year. For the information of those who have not yet subscribed, we will state that the price remains the same as heretofore, viz.: $4 00 per annum.

THE RESOURCES OF AMERICA—HER METALLIC WEALTH—NECESSITY OF A FAITHFUL EXPONENT OF HER MINERAL INTERESTS—HOW THE JOURNAL OF MINING SUPPLIES THIS WANT.

Our commerce borne to the most distant countries, our fertile soil, our thriving manufactures, our facilities for internal communication, our energetic, enterprising people, have all contributed their share in making America great, prosperous, and wealthy. Placed in the path which that adventurous Genoose navigator thought led westward to the wealth and luxury of the East, this country has become the emporium in which the products of the East are interchanged for those of the West. It has acquired prosperity with a rapidity unexampled in history. Scarcely colonized, it attained independence, and, as a nation, its position has been amongst the foremost in the march of progress. And, so far as we can judge, there is nothing in the future to lessen this tendency to advance. Our country will continue to grow great and powerful as she adds to her years of nationality. We possess all the elements of national success; but, amongst all, none so great, none so abundant, as our mineral resources. The position which England attained as mistress of the world's commerce, and as a manufacturing country, was due as much to the wonderful supplies of coal and iron in which she abounds, as to any other cause. We have enough of these to supply the world. Had we no other resource we might aspire to universal empire. But, in our veins of gold and silver, we have as much of the precious metals as will supply us with the medium of exchange for the next ten centuries. No one now knows the extent of our metalliferous wealth—so great is it, and so much is yet undiscovered.

When we consider the importance of the interests involved in our mineral wealth, the necessity of their having a thoroughly faithful and accurate exponent must be apparent. Every shade of opinion in this country, religious and political, is represented in the press. Science has many advocates devoted to its claims. A journal published in the centre of our chief business operations, devoted to the interests of American mining, was required. To protect those interests, to circulate reliable information, to advocate legitimate operations, to expose and denounce speculation, to induce public confidence in our wonderful metalliferous wealth, by publishing facts and reliable statements—for these objects the AMERICAN JOURNAL OF MINING was started; and now, at the commencement of our third volume, entering on another year, we can say, without fear of contradiction, that we have spared no effort to accomplish our task. We have weekly placed before our readers detailed summaries of the mining news of this continent; and, in this department, we have recently introduced an important feature—classifying our information under two distinct heads, according to the subject-matter, and according to the locality. Our summary thus affords a convenient and accurate dictionary of reference on the mining news of the continent. We have given illustrated descriptions of machines connected with mining operations and processes. The series of original articles communicated to the JOURNAL OF MINING have been marked by an ability, extent of information, and masterly style, in every way worthy of their distinguished authors. Amongst those have been papers by Prof. Alfred P. Rockwell, of Yale College; Prof. F. E. Englehardt, of St. Francis Xavier's College; Dr. R. P. Stevens, Dr. L. Feuchtwanger, Dr. Grant, formerly State Geologist of Virginia; J. H. Tiemann, M. E.; J. VanCleve Philips, M. E.; H. Dussauce, Professor of Chemistry to the French Polytechnic; Prof. Henry Wurtz, Prof. Paul C. Morton, R. A. Parrish, Dr. Hirsh, &c. Many other eminent scientists, amongst whom are Professors Tillman, Chandler, Cooke, &c., will, in this and succeeding volumes, contribute articles of interest. In our editorial columns we have endeavored faithfully to place before our readers accurate opinions on the various questions which affected their interests. In discharging this duty, we have been perfectly disinterested and impartial, and of those who might be disposed to dispute the accuracy of our conclusions, none have ever questioned the honesty of our intention. In our reports of the stock, metal, coal and slate markets, we have weekly given our readers a great deal of most important information. Our labors, in all this, have met with due appreciation, and, from every part of the country, we have received kind assurances of the favor with which our efforts have been received. The press have amply testified to the importance of our design, and to our manner of putting it into execution. A large subscription list, and an extensive advertising patronage, are substantial evidence of the approval with which we have been greeted. In the year just opening, we anticipate an increased sphere of operation, and offering our work of last year as an earnest of the future, we are determined to make this paper of still greater value.

THE PORTAGE LAKE GAZETTE, after highly complimenting the manner in which the JOURNAL OF MINING is conducted, expresses surprise that in our recent criticism of the United States Commissioners to the Paris Exposition, we classed H. F. Q. d'Aligney "among the unknowns who are charged with being minus 'brains.'" Our contemporary mistakes the expression. We simply classed that gentleman among those who had heretofore attained "no *national* prominence," and we are none the less pleased to hear such good accounts of his industry and attainments from those among whom he has lived.

BACK NUMBERS.

Subscribers can have back numbers of the JOURNAL OF MINING, neatly bound in half-morocco, gilt, at $1 50, by sending them to this office, postage-paid. We have a limited number of Vols. I. and II. on sale, which we supply at $10 for Vol. I. and $8 for Vol. II. Such of our subscribers as want numbers to complete this file, can have them on application at this office.

STATEMENTS.

THE RARITAN BAY MINING AND MANUFACTURING CO.

We have received the prospectus of this company, recently organized under the laws of the State of New York, and from which we take the following: "The property is located in Middlesex County, State of New Jersey, between South Amboy and Keyport, having a frontage of over two miles on Cheesquake Creek. It consists of 1,353 acres of land, underlayed with beds of lignite or brown coal; these lands have been leased for twenty five years, with privilege of purchase at $250 per acre. The royalty to be paid is (10) ten cents per ton for all coal, clay, sand, minerals or mineral substances mined and sold. There are also upon these lands large beds of potters' clay and brick clay, both of which will become sources of additional revenue to the company. The distance from New York is about twenty-five miles, and vessels of 200 tons can approach to within less than a mile from the coal openings. Those beds of lignite have been found to underlie the whole of this large tract; the main bed being about five feet in thickness at the openings, and by boring, it is found, further back in several places over six feet thick. A lower bed is known to exist, but as yet nothing very positive has been ascertained as to its thickness. The upper bed, now opened, is estimated by practical mining engineers to yield over 4,000 tons of marketable coal to the acre, thus giving a total of over five millions of tons above the water level. Brown coal or lignite as a fuel is of very general use in Germany, both for household and manufacturing purposes. This Jersey lignite is found to compare well with the best German coal. It has been tested for steam purposes, and its lowest relative value to the best bituminous coals is as seven tons to four. This gives to the lignite a market value of $2 85 per ton in New York, as against $5 per ton for the best bituminous coals, and in the same proportion if bituminous coals are higher. These coal beds have been examined by Dr. R. P. Stevens, Dr. Wm. C. Prescott, Dr. Adelberg, Dr. Credner, and lastly, by Mr. E. Gaussoin, of Baltimore, mining engineer. The favorable report of the latter gentleman was fully endorsed by Mr. Thos. Petherick, who also visited this locality for other parties. Several practical coal men have also examined these beds, with the same satisfactory results; thus establishing the fact of the existence of a large body of valuable fuel within a short distance by water from New York, and which can be mined and delivered in this city at $2 per ton, and probably less. . . . . The company propose at once to prepare for active business by opening the mines, building the necessary roads, docks, etc., so as to be enabled to ship coal during the summer months. . . . . In addition to the shipping of coal, attention will also be given to the manufacture of bricks, which can be made at a very reduced cost, owing to the presence of a cheap fuel on the spot, and the superior quality of the brick clay." Among the officers we notice the well-known coal dealers: Samuel Bonnell, Jr.; Louis J. Belloni, Jr.; and Frederick A. Potts. We trust the enterprise will prove a success. Office, 92 and 94 Liberty street, New York.

MEETINGS.

Abbott Iron Co. at 8 South Gay street, Baltimore, April 10th, 10 A.M.; River Oil Co at 410 Walnut street, Philadelphia, April 2d, 10 A.M., Perry Oil Co. at 274 South Third street, Room 8, April 8th, 11 A.M.; Philadelphia and Cherry Run Petroleum Co. 40 South Third street, Philadelphia, April 21, 9 A.M.; Westmoreland Coal Co. at 230 South Third street, Philadelphia, April 3d, 12 M.; Springfield and Deep Run Coal Mining and Manufacturing Co. at 77 Cedar street, New York, April 11, between 11 and 1 o'clock; Crawford Coal Co. at Continental Hotel, Philadelphia, April 10th, 2 P.M.; Mahanoy Coal Co. at No. 7 Pine street, Room 5, April 8th, 12 M.; Gilbertson Coal Co. at 80 State street, Boston, April 1st, 12 M.; Madison Mining Co. at 58 City Exchange, Boston, April 9, 2 P.M.; Humboldt Copper Co. at 40 State street, Boston, April 11, 3½ P.M.; Revenue Extension Silver Mining Co. at 142 South Fourth street, Philadelphia, April 5th, 12 M., Roberts Petroleum Torpedo Co. at 47 Bond street, N. Y., April 24; French Creek Petroleum Co. at 126 Maiden Lane, April 10th; New York and Washoe Mining Co. at 36 Pine street, N. Y., April 2.

DIVIDENDS.

Cameron Coal Co. at 71 Broadway, coupons on bonds due April 15th; Sutherland's Falls Marble Co. at Boston, 6 per cent., payable on or after April 1st, 1867.

ASSESSMENTS

Guilford Copper and Gold Mining Company, at the office of Ed. Pittman, No. 9 North street, Baltimore, 10 cents per share; second payment of 5 cents now due.

NEW PUBLICATIONS.

UNITED STATES BUSINESS DIRECTORY FOR 1867. R. G. DUNN & CO. and John F. Trow. Second edition.

A most complete and comprehensive work, consisting of accurate classified lists of nearly all the business men in the cities, towns and villages of the United States, some 450,000 names. This work cannot but prove useful to persons engaged in every branch of industry, and we recommend it to all those who wish to extend their business.

Scientific Meetings.

GERMAN POLYTECHNIC INSTITUTE.

THE CORINTHIAN ORDER OF ARCHITECTURE—MANUFACTURE OF PORCELAIN—BEET SUGAR—A MANUFACTORY OF CLOCKS IN CHICAGO.

The German Polytechnic Association held its regular weekly meeting on Friday, March 22d, 1867, the President, W. HAUPT, Esq., being chairman.

Mr. Wertheim read a paper on "Corinthian Architecture," reviewing the history of the Greek people, giving the characteristic specialties of the Corinthian style, and discussing finally the monument of Lysicrates, which is the finest monument of the Hellenic art, and of which an engraving was shown to the meeting. He also exhibited detail drawings in full size, which he had prepared for the purpose, and closed his remarks in giving a collection of the Corinthian monuments of Greece, Rome, and the artists of a later generation, viz.: Palladio, Scamozzi, Vignol., and Alberti.

Mr. Hirsh then proceeded to give an account of several manufacturing establishments, which he had visited on his late trip through the West. He described the porcelain factory at Peoria, which was started two years ago, and has grown to be a flourishing establishment now. The clay beds are forty miles distant from the factory, to which the clay is brought by means of carts. The working process consists in passing the clay through grinders, which, in their construction, are very similar to those used in the manufacture of bricks. From these it passes through a second set of grinders, having broad blades instead of knives, in which the clay is mixed with water, thus forming a sort of a slime. This last product is strained, to clean it from stones and other substances, and then washed. To accomplish the washing, the water containing the clay runs over long inclined planes, on which the heavy parts of the clay settle down. The fine "clay milk" which remains, runs off into boxes. Here the clay settles slowly to the bottom, and the water is allowed to run off. The clay, which still contains a good deal of moisture, is then brought into large pans, and sufficient water is evaporated to give it a certain consistency, so that it can readily be moulded. The moulding is done in moulds of plaster of Paris, which absorbs a great deal of the moisture contained in the clay. The articles thus moulded are dried in a warm room in about 48 hours, and immediately burned. Complicated articles are moulded in separate pieces, and put together when dried. These will form one solid piece when burned. Mr. Hirsh then gave an account of beet-root sugar refineries. Beets are cultivated for this purpose in several parts of the country; however, a favorable result has seldom been attained, because the beets never contain the same amount of sugar as they do in Germany, and there they only yield 9 per cent. The process of manufacture is precisely the same as it is in Europe. Mr. Kinkel remarked that on Staten Island a white beet-root is cultivated, which is said to yield 12 per cent. of sugar, and is therefore very well qualified for this purpose.

Mr. Hirsh finally mentioned a clock factory in Chicago, which promises to assume large dimensions. It is situated a few miles from the city, and forms, including the dwellings of the laborers, a little town. There are separate departments for a brass foundry, brass rolling-mill, etc., and it is intended to turn out 300,000 clocks a year. The factory is not finished yet in all its branches, but the annual production has reached the number of 100,000 clocks already.

AMERICAN INSTITUTE—POLYTECHNIC BRANCH.

MANUFACTURES OF NATRONA—"DRESSING" MILL-STONES—BISHOP'S ELECTRIC TELEGRAPH—GLACIERS—MARINERS COMPASS AND THERMO ELECTRICITY.

On Thursday evening, the meeting of the Polytechnic having been called to order by the chairman, Prof. Tillman, Dr. L. Feuchtwanger read a description of Natrona, an extensive manufacturing place in Pennsylvania. It appears that its monthly product of chemicals amounts to 400,000 pounds of concentrated lye, 200,000 pounds of oil of vitriol, 15,000 pounds of aqua fortis, 15,000 pounds of hydrochloric acid, 1200 barrels of salt, and 100,000 pounds of copperas, 4,000 barrels of coal oil and 100,000 bushels of coal. He then entered into a lengthened explanation of the production and uses of cryolite. In a conversation which followed the reading of this paper, Dr. Parmelee made a statement about a beautiful species of bronze lately introduced. It consists of one part of aluminium and nine of copper. It is used in the manufacture of jewelry, and, when made properly, is very like gold. It can be drawn into very fine wire, and it can be beaten out into extremely thin sheets. This bronze is prepared by melting precipitated copper, and then gradually adding the aluminum, which is stirred in by an oxidized iron rod.

Mr. Gray exhibited a valuable machine for dressing millstones. "Dressing" millstones is a very difficult, as well as a very necessary operation—consisting in cutting a number of small lines on the stones. Previous to the invention of this machine, this process had to be performed by hand work, requiring great experience, an educated eye, and steady wrist. Mr. Gray has, by a simple contrivance directing the cutting instrument, rendered this task so easy that any one may perform it. The chairman, Prof. Tillman, and others, expressed a strong opinion in favor of the value of this machine, Mr. Reed saying that it enabled an ordinary mill-worker to do what before would require the experience of ten years.

Mr. Samuel C. Bishop submitted specimens of various electric cables, manufactured in this country, amongst which were some of the first ever made. To prove the durability of gutta percha, he showed a portion of a tube of that material, which had been used to convey water to Blackwell's Island. It had been submerged in the East River for fifteen years. It appeared perfectly sound, but exhibited a slight oxidization, arising, as was explained, from exposure to the atmosphere. It is a curious fact that gutta percha shrinks on exposure to the action of the air, which does not take place when it is submerged. Dr. Van der Weyde exhibited a matrix for stereotypes made of gutta percha. It possesses this advantage over wax or copper moulds, that it may be used again, as it is elastic.

Dr. Rowell addressed the Institute on the subject of icebergs and glaciers. From a consideration of certain statements made by Dr. Hayes and Admiral Goldsborough, he formed a theory as to the origin of glaciers, and their course from a Polar sea. It differs from that of Prof. Agassiz, as to their gradual descent from heights; and also as to the cause of their sudden disappearance. He believes that in ice or frozen snow, there is sufficient strength to support itself for a time, when suspended over a height, as we see snow overlapping the eaves of houses. When it falls, it descends at once into the water. The immense size and weight of these ice mountains cause the Northern seas to rise about two feet. They carry with them the elements of their own destruction. The ice melting, forms in the ocean an immense fresh water lake. Into this the berg sinks. Mr. Reed maintained that glaciers were ice rivers, and proceeded gradually into the sea. Dr. R. P. Stevens stated that the whole of Greenland was one immense glacier. In that country there are immense mountains from which these ice-hills descend. Dr. Bradley expressed an opinion that at the Pole there was a large sea, and quoted in his favor Dr. Kane. Mr. Distournel maintained that Dr. Kane never said, of his own personal knowledge, that there was a sea at the Pole. What the Doctor said was that Brooks told him he saw it.

Dr. Van der Weyde said that what he intended to speak of, had an intimate connection with the North Pole. A thousand years ago the Chinese observed that a magnet attracted a needle, and also that a needle, moving freely on a pivot, pointed to the North. There, they said, was an immense magnet, and that explanation has been generally accepted. In 1827, Oersted discovered that an electrical current possessed attractive power. Barlow maintained that the attraction of the needle was electrical. Magnetic attraction increases in inverse proportion to the distance. Therefore, if the attraction of the needle to the North is magnetic, it ought to increase in inverse ratio as we approach it. But this is not the case. Barlow constructed a globe and turned it before the fire. The rotation and heat produced a faint electric current. Another objection to the theory of magnetic poles, is the variation of the declination and dip of the compass. Two hundred years ago, in the meridian of England, the needle pointed due North. It is now nearly 23° west. Fifty years ago it was due North in our longitude. It is so now at a point west of the Mississippi. These changes are supposed to be the effects of cosmical causes. Dr. Van der Weyde then explained the construction of Siebee's galvanometer, in which bismuth and antimony are used, and also an improved thermo-electric machine, in which, instead of ice, an enlarged copper surface was used. He entered at some length into a discussion of the utility of thermal electricity, and gave his opinion that the time was not distant when a kerosene or gas lamp might be used as an electrical machine. The question of substituting electricity in place of steam, as a motor, having been raised, it was stated that it requires 32 pounds of zinc to accomplish as much as six pounds of coal. On the next evening of meeting, Dr. Van der Weyde will address the Association on the spectroscope and meloleon, illustrating certain theories in actinism and acoustics.

MARKET REVIEW.

FRIDAY EVENING

Gold and Silver Stocks—Show a general advance under the influence of an active market; Consolidated Gregory, however, shows a decline of 1.05, and Quartz Hill 20c.

	March 22.		March 29.	
	Offered.	Asked.	Offered.	Asked.
Alameda	7 40	7 65	8 20	8 35
American Flag	90	1 00	90	1 00
Atlantic and Pacific	2 25	2 35	....	2 25
Bates & Baxter Gold	1 50	2 00	1 25	2 25
Benton Gold	1 25	1 60	1 00	....
Bobtail Gold	....	3 00	....	3 00
Boscobel Silver	....	5 00	....	4 50
Bullion Consolidated	....	1 50	....	1 50
Burroughs Gold	....	30	....	35
Central Gold	4	6	....	1
Crozier Gold	....	13	....	....
Columbian G. & S.	3 00	3 05	3 05	3 10
Consolidated Colorado	3	8	....	8
Consolidated Gregory	11 15	11 25	10 10	10 15
Corydon	3 75	3 80	4 30	4 50
Des Moines Gold	35	42	30	40
Downieville Gold	6	10	6	10
Gilpin Gold	....	3 60	....	3 60
Gold Hill	3 90	4 05	5 00	4 00
Gunnell Gold	5 00	5 21	4 80	4 95
Gunnell Union	50	54	51	54
Holman	15	20	15	20

Hope Gold	25	45	25	40
Keystone Silver	4	6	3	4
Kipp & Buell Gold	60	75	60	70
La Crosse Gold	45	55	40	55
Liebig	....	1 00	25	....
Liberty Gold	6	7	6	....
Montana Gold	....	50	25	45
New York	1 00	1 15	95	1 25
Nye Gold	6	8	....	8
People's G. & S. of Cal	1 00	1 05	1 45	1 50
Quartz Hill	3 50	3 15	3 30	3 40
Reynolds Gold	....	75	....	....
Rocky Mountain Gold	1 00	....	1 00	....
Smith & Parmelee Gold	6 00	6 50	6 00	6 15
Sensenderferfer	....	30 00	....	30 00
Symonds Fork	....	1 75	....	2 00
Texas Gold	....	....	12	....
Yellow Jacket	....	7	....	6

The following were the sales at the first board: Alameda Silver, 100 s. 3, $8 25; 100 $8 30. Columbia Gold and Silver, 700 $3 10; 100 b. 3, $3 10; 200 s. 30 $3 05; 100 b. 3, $3 10; 100 s. 3, $3 09; 200 $3 09. Consolidated Gregory Gold, 100 s. 30, $10 10; 200 s. 3, $10 10; 100 $10 05; 500 s. 3, $10 05; 100 b. 10, $10 10; 100 s. 30, $10 05; 200 s. 3, $10 05; 400 b. 3, $10 10; 100 s. 3, $10 10; 100 b. 3, $10 10. Consolidated Colorado, 500 3c. Corydon, 100 $4 45. Hope Gold, 100 25c. Keystone Silver, 1,500 4c; 1,000 b. 3, 4c.; 1,000 s. 3, 3c.; 500 b. 3, 4c. Peoples Gold and Silver, 100 $1 50; 500 s. 3, $1 50; 500 $1 50, Quartz Hill, 100 $3 35. Second call: Atlantic & Pacific, 500 $2 10; 300 $2. Columbia Gold and Silver, 100 $3 09; 100 $3 10. Consolidated Gregory Gold, 400 $10 05; 200 s. 3, $10 05; 100 $10 10; 200 s. 3, $10 10; 200 $10 15. Corydon, 100 $4 35; 200 b. 10, $4 45; 100 $4 35. Peoples Gold and Silver, 300 $1 50.

Sales were as follows at the second board: Columbia Gold and Silver, 100 at $3 10; 200, s. 3, at $3 10; 300 at $3; 100, b. 30, at $3 20; Consolidated Gregory Gold, 200, s. 3, at $10 05; 200 at $10 05; 600 at $19; 900 at $9 90; 300 at $9 85; 100, b. 3, at $9 85; 100, b. 3, at $9 90; 50 at $10; 200 at $9 90; 100, s. 3, at $9 90; 100, s. 3, $9 85; 200, $9 85; 100, b.3, $9 85; Keystone Silver, 1,000, 4; Kipp & Buell, 500, 75; Peoples' Gold and Silver, 200, $1 45; Quartz Hill, 200, s 3, $3 25; 300, 3 25; 100, 3 20; 200, 3 15; 100, b.10, 3 20; 100, 3 15; 100, s. 3, 3 15; 100, b.10, 3 15; 200, s.3, 3 10; 100, 3 10; 200, s.3, 3 10; 200, 3 10; 100, s.3, 3 15; Symonds' Fork, 1,000, 1 50; Charter Oak Company, 200, 1 65. Second call: Columbia Gold and Silver, 200 b. 3, $1 10; 100 s. 3, $3 10; Alameda Silver, 100 $8 35; Consolidated Gregory Gold, 100 $9 75; 100 $9 60; 200 $9 55; 2 100 $9 50; 200 s. 3, $9 55; Corydon, 200 $4 05; 200 $4; 200 b. 30, $4 20; 100 b. 30, $4 15; 100 $4; Gunnell Gold, 100 $4 80; Keystone Silver, 1,000 3c.; Peoples' Gold and Silver, 500 s. 3, $1 40; Quartz Hill Gold, 100 b. 10, $3 15; 200 s. 3, $3 10; 200 $3 10; 100 b. 3, $3 10; 100 b. 10 $3 10; 100 $3 05; Symonds' Fork, 1,000 $1 55.

Copper Stocks.—400 shares of Charter Oak sold at the first board for $1 67@1 68. At second call, 100 shares of Davidson sold, s.30, at $1 65, and 100 b.30 at $1 70.

	March 22.		March 29.	
	OFFERED.	ASKED.	OFFERED.	ASKED.
Caledonia	....	15 00	....	....
Canada Copper	50	....	....	....
Charter Oak Copper	1 48	....	1 65	1 68
Davidson Copper	1 45	1 45	1 60	1 70
Hilton Copper	....	....	5 00	....

Lead Stocks.—900 shares of Walkill were sold at first board for 50c., a decline of 15c. for the week. 700 shares changed hands at same figure at second board.

Petroleum Stocks.—The following were the sales to-day at first board: 100 Beuncheff Run at $2 50; 500 Pithole Creek at 40 @ 60.

	March 22.		March 29.	
	Offered.	Asked.	Offered.	Asked.
Beuncheff Run	2 00	2 75	2 00	2 50
Buchanan Farm	10	18	....	20
Central	70	90	70	1 00
Clinton Oil	90	1 25	75	1 35
Cherry Run Special	....	14	....	....
Excelsior	....	20	....	20
Manhattan	....	20	....	20
N. Y. and Alleghany	....	4 50	....	4 50
Pit Hole Creek	....	75	....	75
Rynd Farm	6	10	6	....
United Pet. Farms	5	....	5	10
United States	3 50	3 75	....	4 00

Miscellaneous Stocks.—Wells, Fargo & Co., 64@66; American Express, 54½@56; Cumberland Coal 31; Pacific Mail, $1 20; Quicksilver Mining, 32.

Government Stocks.—Ten-forties are in active demand. The following has been the range of quotations during the morning:

U. S. 6s, 1867	130½@131
U. S. 6s, 1868, coupon	129 @130
U. S. 6s, coupons, 1881	108⅜@108⅝
U. S. 5-20s, 1862, coupon	109½@109¾
U. S. 5-20s, 1864, coupon	107½@107⅝
U. S. 5-20s, 1865, coupon	107⅝@108
U. S. 5-20s, 1865, coupon, new	107¼@107¼
U. S. 10-40 coupon	97⅝@ 97⅞
U. S. 7-30, 1st	106 @106⅛
" 2nd	105⅜@105½
" 3rd	105⅜@105½

Foreign Exchange is firm. Bills at 60 days on London are quoted at 108@108⅛ for commercial; 108⅛@109¼ for bankers'; do. at short sight, 109⅛@109⅜; Paris at 60 days, 5.18¾@5.15; do. at short sight, 5.15@5.12½; Antwerp, 5.18¾@5.17½; Swiss 5.18¾@5.17½; Hamburg, 36@36¾; Amsterdam, 40⅞@41⅛; Frankfort, 40⅛@40⅜; Bremen, 78⅛@79⅛; Prussian thalers, 71⅜@72⅛.

Copper very dull. Baltimore, 24c.; Portage Lake, 24c.; Detroit, 25c. There is a fair stock in the market.

Iron.—American Pig Iron, $42. Market dull. In the retail trade, Osthout & Co. report a considerable dullness at the following prices: Swedish Iron, $170@172; common, $100@105; refined, $110@115; band, $140; rods, 3-16 to ⅜, $110@172½; scroll, ⅝ to ⅞, $140@190; horseshoe, $135@140; hoop, ⅝ to 2, $140@215; nail rod, 9@10¼c., ovals, ½ to 1½, $135@145.

Tin—Market dull at 30@30½c.

Lead—We quote it at 9@9¼c. A considerable dullness in the market.

Spelter—Demand feeble; quoted at 9c.

Quicksilver sells in 90c., in lots at 85c.

Petroleum.—The market is firm. We quote Crude 40@47 gr. in bulk, 11½@12c. and 16½@17c. in bbls.; refined, in bond, light straw, 25@25½c.; light straw to white, 25½@25c.; prime light straw to white, 26½27c.; standard white, 27⅜@28c.; prime white, 29c.

THE SLATE TRADE.

No business of magnitude has been developed yet. We hear of a few transactions at figures somewhat lower than those given below. Next week we trust we shall be compelled to chronicle more activity in the market.

Roofing Slate.

Vermont purple,	1st	quality, per	square	$11 50@12 50
" "	2d	"	"	10 50@11 50
" green,	1st	"	"	12 00@13 50
" "	2d	"	"	11 00@12 00
" red,	1st	"	"	13 00@14 00
" "	2d	"	"	12 00@13 00
Pa. bl'k & d'k blue,	1st	"	"	11 00@12 00
" "	2d	"	"	10 00@11 00

PRICES DELIVERED. PER SQUARE.

Chicago.—Vermont purple and green,	1st qual		24 "	$14 50@15 50
" "	"	"	24 "	13 50@14 50
" " red	"		1st "	15 50@16 50
" " "	"		2d "	14 50@15 50
Penn. black	"		1st "	16 00@17 00
" "	"		2d "	15 00@16 00

Buffalo.—$2 or $3 lower than Chicago.
Cleveland.—$1 higher than Buffalo.
Cincinnati.—50 cents higher than Cleveland.
New Orleans.—$19@20 per square.
Charleston, S. C.—$15@16 per square.

THE COAL TRADE.

New York, March 29, 1867.

There has been some activity in the market during the past week, making "Trinity Buildings" appear like old times. At the Scranton sale, which took place on Wednesday last, the prices obtained showed some advance, which seemed to give a better tone to the general market. We now hope for a fair business.

The attendance at the sale was large and the bidding very spirited, and some think that if the Company chose, better prices might have been obtained. Below we give a full report of the sale, with a comparison of the prices obtained in February last:

March 27—70,000 Tons.		February 27—60,000 Tons.	
LUMP.			
13,000 tons.		13,000 tons.	
3,200 tons at	$4 12½	9,700 tons at	$4 15
8,500 "	4 25	1,400 "	4 20
2,300 "	4 30	1,000 "	4 25
		400 "	4 30
		500 "	4 35
STEAMBOAT.			
8,500 tons.		6,000 tons.	
7,000 tons at	$5 00	3,000 tons at	$4 50
1,300 "	5 12½	400 "	4 62½
200 "	5 20	1,000 "	4 75
		1,000 "	4 87½
GRATE.			
16,000 tons.		12,000 tons.	
3,350 tons at	$5 05	2,700 tons at	$5 00
4,850 "	5 10	2,800 "	5 05
3,800 "	5 12½	1,200 "	5 10
4,000 "	5 15	1,000 "	5 12½
100 "	5 25	200 "	5 15
		3,700 "	5 20
		350 "	5 25
EGG.			
14,500 tons.		8,000 tons.	
11,700 tons at	$4 75	4,000 tons at	$4 70
1,400 "	4 77½	1,550 "	4 72½
200 "	4 78	2,350 "	4 75
2,250 "	4 80	100 "	4 80
650 "	4 87½		
STOVE.			
18,000 tons.		14,000 tons.	
5,700 tons at	$5 00	3,500 tons at	$5 05
4,800 "	5 05	1,000 "	5 07½
7,100 "	5 10	4,250 "	5 10
300 "	5 12½	2,700 "	5 15
1,850 "	5 15	1,750 "	5 17½
100 "	5 20	800 "	5 20
200 "	5 25		
CHESTNUT.			
9,000 tons.		7,000 tons.	
4,950 tons at	$4 05	4,050 tons at	$4 05
900 "	4 07½	200 "	4 07½
1,750 "	4 10	2,750 "	4 10
1,300 "	4 12½		
100 "	4 15		

The freights and tolls of the Schuylkill and Lehigh Railroads and Canals will be found complete in this week's issue.

Messrs. Heckscher & Mason have associated with them Mr. Henry E. Bowns, late of Messrs. Rathbun, Stearns & Co., for the transaction of a general wholesale and commission Coal business. We wish this young and enterprising firm a continuation of the success they have heretofore met with.

A meeting of the operators of the Lehigh region was held in Philadelphia to-day. Prices for April were agreed upon, which are on file in our office. There is no coal from this district coming to tide water, the small production at the present time being consumed on the line. Our quoted prices are therefore nearly nominal.

Our Lehigh Valley Railroad and Broad Top reports have not come to hand for the past two weeks. Will our friends in those districts please send them along regularly—also accept our thanks for valuable documents received?

Rates of Freight on Coal over Lehigh Valley Railroad

On and after Monday, March 18, 1867, and until further notice, the Lehigh Valley Railroad Company agree to transport Coal as per rate given below, subject to the following rules and regulations:

First. All claims for lost Coal must be made by the shipper. This company will in no case settle such claims with consignee.

Second. All claims for lost Lump Coal, for which this company may be responsible, will be paid for at the same rate per ton as this company and the iron furnaces in the Lehigh Valley pay for Coal for their own use. The allowance for Chestnut will be twenty-five cents less, and for Stove and Egg size twenty-five cents per ton more than for Lump.

LEHIGH VALLEY RAILROAD.

From Mauch Chunk to	Lots 50 tons or more.	Lots less 50 tons.
Lehighton	25	35
Parryville	35	45
Lehigh Gap	44	54
Slatington	52	62
Rockdale	58	68
Laury's	69	79
White Hall	80	90
Coplay	85	95
Hockendauqua	88	98
Catasauqua	91	1 01
Fullerton	91	1 01
Allentown	95	1 05
Bethlehem	1 02	1 12
Freemansburg	1 11	1 21
Lime Ridge	1 17	1 27
Glendon	1 32	1 42
Easton	1 42	1 52
Phillipsburg, N. J.	1 50	1 60

THROUGH COAL.	L.V. propor. from Mauch Chunk.
North Penn. Railroad—Way stations	1 02
" " from Lansdale	1 00
" " from Fort Washington	77
" " to Philadelphia	77
Central Railroad of New Jersey—Elizabethport	81
" " " Port Johnson	81
Morris & Essex Railroad—Hoboken	81
Bel. Del. Railroad—Trenton for shipment	81
Port Delaware	81
Delaware Canal	81

Robert H. Sayre, Sup't. & Eng'r.

Editors American Journal of Mining:

Gentlemen—Rates adopted March 18, Lehigh Valley Railroad, proportion on Tide Coal, from Mauch Chunk, is 81c., to which add Central Railroad of New Jersey, to Elizabethport, $1 12, to Port Johnson, $1 19—making through rate from Mauch Chunk 1¾c. per mile, or $1 93 to Elizabethport, and $2 00 to Port Johnson. Distance from Mauch Chunk to Elizabethport is 46—64—110 miles, to Port Johnson 46—68—114 miles. In addition to these rates, Central charge 10c. per ton for wharfage. Drawback will be allowed on all through, or Tide, Coal, from March 4, from Mauch Chunk to Easton, of 34c. per ton, to March 18; so that in reality the reduction took place March 4. To Philadelphia from Mauch Chunk through rate is $2 per ton. The Hoboken rate, via. Morris and Essex, is the same as Port Johnson.

Yours, William H. Sayre, Jr.

The following is the quantity of coal shipped over the principal roads for the week ending March 23d, 1867:

	1866.		1867.		
	WEEK.	TOTAL.	WEEK.	TOTAL.	DECR'SE.
Phil. & Reading R.R.	....	754,726	55,811	604,367	150,359
Schuylkill Canal	....	48,326	18,156	22,699	26,727
Lehigh Val. R. R.	....	.....	.....	.....	.....
Lehigh Canal	....	.....	.....	.....	.....
Del & Hudson	....	.....	.....	.....	.....
Scranton North	6,490	69,273	7,422	77,095	.....
Scranton South	19,359	161,877	23,596	259,811	81,876
Penn'a. Coal Co. Rail	.....	80,817	12,324	102,183	13,141
Wyoming North	....	.....	.....	.....	.....
Wyoming South	....	.....	.....	.....	.....
Shamokin	13,357	72,933	12,910	67,254	5,679
Trevorton	.....	.....	641	.....	.....
Short Mountain	417	6,037	37	4,450	1,587
L. V. Co.	566	2,740	635	5,636	2,896
Broad Top	....	.....	.....	.....	.....
Williamsto'n	.....	.....	1,144	7,806	.....
Total	.....	1,196,729	.....	1,151,181	.....
Cor'ng time last year	.....	.....	.....	.....	.....
Decrease	.....	.....	.....	.....	.....

Lehigh and Mahanoy Coal Trade,

For week ending March 23, 1867.

NAMES OF SHIPPERS.	WEEK.	TOTAL.
Trenton Coal Co	35 12	377 08
Mount Etna	.....	43 04
Mahanoy Coal Co	216 18	911 11
Delano Colliery	1,335 17	17,333 19
Glendon Coal Co	820 08	4,139 10
Rathburn, Stearns & Co	798 18	10,135 07
E. S. Silliman	2,084 17	25,918 07
McNeal Coal & Iron Co	1,883 15	14,635 10
Knickerbocker Coal Co	1,216 04	14,003 06
Thomas Coal Co.	742 12	4,273 17
Williams & Herring	361 02	3,079 15
Other shippers	.....	10 02
Total	9,496 03	94,861 17
Corresponding week last year	3,168 17	64,817 19
Increase	6,327 06	30,043 19
Decrease	.....	.....

Schuylkill Coal Trade.

BY RAILROAD & CANAL, FOR WEEK ENDING MARCH 28, 1867.

	Railroad.	Canal.
St. Clair	18,799	.....
Port Carbon	8,110	.....
Pottsville	293	.....
Schuylkill Haven	17,031	.....
Auburn	2,475	.....
Port Clinton	9,103	18,156
Total for week	55,811	18,156
Previously this year	548,556	4,455
Total	604,367	22,609

Cumberland Coal Trade by Railroad.

Statement of Coal Shipments over the Baltimore & Ohio Railroad for the week ending March 9th:

	Tons.
From Cumberland & Pennsylvania R. R.	
American Company	1,905 02
Consolidation Co	754 02
Clifton Co	20 12
From Eckhart R. R.	
Blaen Avon Company	132 00
Spruce Hill	446 19
	3,258 13
From George's Creek via. Piedmont.	Tons.
George's Creek Coal and Iron Company	520 05
Central do	1,978 19
Atlantic do	392 04
Piedmont do	17 10
Swanton do	1,289 14
Parton do	1,080 16
Potomac do	325 13

George's Creek Mining Co.	1,149 12
Franklin do	1,377 00
Hampshire do	1,134 16
Total	9,263 18
Gas Coal.	Tons.
From Mines West of Piedmont	1,190 00

Prices of Coal by the Cargo.

[CORRECTED WEEKLY.]

At New York, March 29, 1867.

Schuylkill Red Ash, choice	$6 25@	$6 50
" Ordinary	5 00	....
" White Ash Lump	5 50	5 75
" Steamboat	6 00	6 25
" Broken	5 00	7 00
" Egg	6 50	7 00
" Stove	6 50	7 00
" Chestnut	4 75	5 50
Lehigh White Ash Lump	6 25	6 75
" Broken	6 00	....
" Egg	6 00	....
" Stove	6 25	....
" Chestnut	5 50	....
Wilkesbarre Lump	5 50	....
" Broken & Egg	5 75	....
" Stove	6 00	....
" Chestnut	5 25	....
Wyoming Lump	5 00	....
" Steamboat	5 25	....
" Stove	5 50	....
" Chestnut	4 75	....

SPECIAL COALS.

Despard Gas Coal	10 00	....
Westmoreland Gas Coal	10 00	....
Blossburg & Fall Creek	6 25	....
Diamond Vein Red Ash, Schuylkill	6 25	....
Locust Dale White Ash, "	5 75	....
Honey Brook " " Lehigh	....	....
Sugar Loaf " " "	....	....
Room Run " " "	....	....
Old Company's " " "	....	....
Spring Mountain " " "	....	....
Sugar Creek	....	....
Silver Brook " "	....	....
Buck Ridge " " Shamokin	....	....
Epohn & Lewis	6 50	....
Shenandoah	5 75	....
Swatara Falls, Red Ash	6 00	....
Lorberry	6 00	....
Broad Mountain	5 50	....
Wyoming	5 50	....
McNeal Co.	5 75	....
George's Creek (Balt.)	5 25	....
" " (Georgetown)	5 00	....
Locust Mountain (R. F. & Co.)	5 75	....
Duncan Red Ash	6 25	....
Fulton White Ash	....	....
Stout	....	....

Agents for these Coals may be found in our advertising columns.

At Philadelphia, March 29, 1867.

Lehigh Lump and steamboat	$5 25@	....
" Prepared	5 25	....
" Chestnut	4 75	....
Schuylkill Red Ash Prepared	5 00	5 50
" Chestnut	3 50	....
" White Ash Lump and Steamboat	4 25	....
" Broken	4 25	....
" Egg and Stove	4 25	4 50
" Chestnut	3 75	4 00
Locust Mt. Lump, and Steamboat	4 25	5 00
" Broken	4 25	....
" Prepared	4 50	....
" Chestnut	3 50	....
Lorberry Coal	4 75	....
Shamokin	5 00	....
Franklin, (Lykens Valley)	5 00	....
Broad Top	5 00	....

Scranton Coal at Elizabethport, March 29, 1867.

Lump	$4 50@	— —
Steamer	5 50	— —
Grate	5 50	— —
Egg	5 25	— —
Stove	5 50	— —
Chestnut	4 50	— —

Prices for Pittston Coal at Newburgh, March 22, 1867.

Lump, per ton of 2240 lbs	$5 20	....
Steamer, " " "	5 20	....
Grate " " "	5 35	....
Egg " " "	5 45	....
Stove " " "	5 70	....
Chestnut " "	4 80	....

70 cents additional to New York.

Lackawanna at Rondout, March 29, 1867.

(Average contract prices for year.)

Lump	5 00	@....
Steamer	5 10	@....
Grate	5 30	@....
Egg	5 40	@....
Stove	5 55	@....
Chestnut	4 60	@....
Pea	4 00	@....

Lehigh Coal at Elizabethport, March 22, 1867.

Lump	6 75@	....
Steamboat and Broken	6 00	— —
Egg	6 00	— —
Chestnut	5 00	— —
Stove	6 50	— —

At Baltimore March 29, 1867.

Wilkesbarre & Pittston W. A., wholesale	$7 00@	$7 25
" " retail	7 75	8 00
Lykens Valley & Sunbury R. A., wholesale	7 00	7 25
" " retail	7 75	8 00

George's Creek and Cumberland Coal.

Run of mine, f. o. b. at Locust Point	$5 60@	5 75
At Georgetown	5 50	....

(From the Mercantile Gazette.)

At San Francisco March 10, 1867.

Duty Bituminous $1.25. Other kinds 40 cents per ton

Australian	$12 00@	....
Do Wallsend	12 00	15 00
Pittston, ton	14 50	....
Lehigh	17 00	....
Cumberland, cks	....	27 00
do bulk	23 00	....
Scranton	14 50	....
Liverpool	13 00	....
Scotch	14 00	....
West Hartly	14 00	....
Vancouver Island	13 00	....
Bellingham Bay	10 00	....
California	6 00	8 00
Cannel	16 50	....
Mt. Diablo	7 00	....

Prices of Provincial Coals.

[REPORTED FOR THE JOURNAL OF MINING.]
BY LOUIS J. BELLONI, JR., 43 Pine street, N. Y.
Duty $1.25 per ton.

Block House (on board)	$1 75	gold
Gowuie "	1 75	"
Lingan "	1 75	"
Sidney "	2 25	"
Pictou "	2 25	"
Glace Bay "	1 87½	"
International Co.'s "	1 75	"
Slack Coal "	75@1 00	"

Prices of Foreign Coals.

[REPORTED FOR THE JOURNAL OF MINING.]
BY H. L. PARMELE & BRO., 32 Pine street, N. Y.
Duty $1.25 per ton.

Liverpool Gas Cakiug	$10 50
" " Cannel	15 00
" House "	18 00
" " Orrel	16 00

Per ton 2240 lbs.
PRICES FROM YARD:

Liverpool Orrell, screened	20 00
" Cannel, "	22 00

per ton 2000 lbs. delivered.

Coal Freights.

From Port Richmond, Philadelphia.

Albany (& towing)	$1 80@	— —	Newburg	$1 68@	— —
Alexandria	1 60	— —	Newburyport	3 15	— —
Appanoag	2 00	— —	New Haven	2 00	— —
Aspinwall	— —	— —	New London	2 00	— —
Bangor	2 00	2 70	Newport	2 96	— —
Bath	3 60	— —	Newport, R. I.	2 10	— —
Baker's Landing	— —	— —	New York	1 45	1 50
Bedford	— —	— —	Norfolk	1 50	— —
Boston	2 50	— —	Norwalk	2 08	— —
Bridgeport	2 15	— —	Norwich & ton	2 10	— —
Bristol	1 90	— —	Pawtucket, & tow'g	2 40	— —
Calais	3 50	— —	Petersburg	2 00	— —
Cambridgeport	3 50	— —	Philadelphia	— —	— —
Catskill (& tow)	2 00	— —	Portland	2 75	— —
Charleston, S. C.	2 25	— —	Portsmouth, N. H.	2 75	— —
Charlestown	3 50	— —	Providence	2 06	— —
Chelsea	2 50	— —	Provincetown	1 90	— —
Commercial Point	2 30	— —	Poughkeepsie, & t'g	1 60	— —
Davenport and dis.	2 00	— —	Port Chester	1 60	— —
Delaware City	80	— —	Plymouth	2 25	— —
Dighton	2 00	— —	Richmond	2 25	— —
East Greenwich	2 10	— —	Rockland	— —	— —
Elizabethport	— —	— —	Roxbury	3 40	— —
Fall River	2 00	— —	Sangus	2 50	— —
Fort Monroe	1 60	— —	Sing Sing	1 60	— —
Fredericksburg	1 75	— —	St. Johns (n gold)	2 00	— —
Georgetown	1 90	— —	Salem	2 75	— —
Gloucester	2 50	— —	Savannah, Ga	2 25	— —
Hartford	2 50	— —	Stonington	2 25	— —
Lynn and dis	2 60	— —	Washington, D. C.	2 00	— —
Milton	3 75	— —	West Point & tow	1 70	— —
Malden	3 60	— —	Wilmington	1 00	— —
Mobile	5 10	— —	Williamsburg	2 87	— —
Neponsett	3 15	— —	Winterport	2 00	— —
New Bedford	2 30	— —			

From Newburgh.

River.	Co.'s Boats.		Eastern.		
Albany	50@	....	Boston	1 75@	....
Barrytown	35	....	Bridgeport	1 12½	....
Catskill	35	....	Bristol	1 40	....
Cold Spring	30	....	Dighton	1 45	....
Coeymans	45	....	Fall River	1 40	....
Coxsackie	40	....	Mystic	1 30	....
Fishkill Landing	20	....	New Haven	1 12½	....
Greenbush	50	....	New London	1 30	....
Haverstraw	45	....	Newport	1 40	....
Hudson	35	....	Norwalk	1 12½	....
New York	70	....	Norwick	1 40	....
Nyack	50	....	Pawtucket	1 65	....
Peekskill	40	....	Providence	1 45	....
Poughkeepsie	25	....	Stamford	1 12½	....
Rhinebeck	30	....	Stonington	1 30	....
Saugerties	35	....	Warren	1 45	....
Sing Sing	50	....			
Stuyvesant	40	....			
Tarrytown	50	....			
Troy	55	....			
West Point	30	....			
West Troy	55	....			
Yonkers	55	....			

From Rondout.

River.			Eastern.		
Albany	50@	....	Boston	2 10@	....
Barrytown	35	....	Bridgeport	1 55	....
Catskill	40	....	Bristol	1 50	....
Cold Spring	30	....	Dighton	1 55	....
Coeymans	50	....	Fall River	1 50	....
Coxsackie	45	....	Mystic	1 40	....
Fishkill Landing	20	....	New Haven	1 30	....
Greenbush	55	....	New London	1 40	....
Haverstraw	45	....	Newport	1 50	....
Hudson	45	....	Norwalk	1 25	....
New York	65	....	Norwick	1 50	....
Nyack	55	....	Pawtucket	1 75	....
Peekskill	45	....	Providence	1 55	....
Poughkeepsie	30	....	Stamford	1 20	....
Rhinebeck	55	....	Stonington	1 40	....
Saugerties	45	....	Warren	1 55	....
Sing Sing	55	....			
Stuyvesant	50	....			
Tarrytown	55	....			
Troy	65	....			
West Point	35	....			
West Troy	60	....			
Yonkers	55	....			

From Elizabethport.

Albany	$1 00@	— —	New London	1 25@	— —
Boston	2 00	— —	Newport	1 50	— —
Bridgeport	1 00	— —	New York	55	— —
Fall River	1 50	— —	Norwalk	1 00	— —
Hartford	1 50	— —	Norwich	1 20	— —
Hudson	1 00	— —	Pawtucket	1 75	— —
Lynn	— —	— —	Portland	2 00	— —
Middletown	1 25	— —	Portsmouth	2 15	— —
New Bedford	1 50	— —	Providence	1 50	— —
Newburyport	2 25	— —	Salem	2 00	— —
New Haven	1 00	— —	Taunton	1 40	— —

From Georgetown or Alexandria.

To Philadelphia	$1 60	— —	Boston	3 00	3 25
New York	2 25	2 50	Sound Ports	2 75	3 00

From Baltimore.

To Philadelphia	$1 40@	1 50	Boston	3 00@	3 25
New York	2 25	2 50	Sound Ports	2 75@	3 50

Provincial Freights.

	Currency.
Sydney to N. Y.	$3 50
Lingan	3 75
Cow Bay	3 75
Big Glace Bay	4 50
Little "	3 75

Foreign Freights.

New Castle and Ports on Tyne	18£@ keel.
Liverpool	12s.6d.@ 15s

By Railroad.

Transportation from Schuylkill Haven to Pt. Richmond	$2 00
Freight from Pt. Richmond to New York	1 50
Total	$3 50
Drawback	50
	3 00

From Port Carbon 8 cents per ton more.

To Elizabethport.

L. V. R. R. from Mauch Chunk to Easton	$ 81
C. R. R. of N. J., Easton to Elizabethport	1 22
	2 03
Shipping expenses at Elizabethport	30
Total	$2 33

To Port Johnson.

L. V. R. R.	$ 81
C. R. R. of N. J.	1 19
do. do wharfage	10
Shipping Expenses	25
Total	$2 35

To Hoboken.

L. V. R. R.	$ 81
Morris and Essex R. R.	1 19
" " wharfage	10
Shipping Expenses	25
Extra to N. Y. or Hudson River Shipments	10
Total	$2 45

By Canal

From Schuylkill Haven to Port Richmond	$1 00
Freights and tolls by Raritan Canal	2 20
	$3 20
Drawback	20
Total	$3 00
From Mauch Chunk to New Brunswick—	
By Lehigh: Del. Div. and Del. and Raritan Canal	80
Freights through	1 25
Towage	22
	$2 37

COPPER ORES.

NEW YORK, March 29, 1867.

No ores are offered for sale in the market, and nobody is anxious to buy. Prices nominal—say $3¼ for 10 to 20.
3½ " 20 " 30.
3¾ to 4 for higher grades.

BALTIMORE, Md., March 29, 1867.

Copper ores are now unsalable at Baltimore. Stocks on hand too heavy. We have offers of 18 per cent. ores at $3 50 without being willing to take them. Nominal quotations should be

50 per cent and over	$3 50	cash
25 " "	3 25	"
15 " "	3 00	"
10 " "	2 50	"
5 " "	2 00	"

SAN FRANCISCO, Cal., Feb. 23d, 1867.

The brig Laura, says the San Francisco *Gazette*, Feb. 23, arrived on the 17th instant from Porte Isabella, with a cargo of ores from the mines on William's Fork of the Colorado. These consisted of sixty tons from the Planet Mine, thirty tons from the smelting works of the great Central Company. The price of ores at the present is very low. One year ago a similar lot of ores from the Planet Mine, of the same assay value, brought $35 per ton more than is offered now. The high price of freight and the low price of ores in the markets of Swansea and Boston have had a very depressing effect on the California copper mining interest. The price at present offering for forty per cent. ores being only $2 25 per unit; fifteen per cent. ores will not realize more than $1 50 per unit, a price which will not defray the costs of shipping at the current rate of freight.

FOREIGN MARKET REVIEW.

Metal Report.

LONDON, E. C., March 8, 1867.

The metal trade remains extremely dull, Tin and Spelter being the exception.

IRON.—Welsh and Staffordshire Iron is without change, the demand very limited. Rails, on the other hand, are firm. Scotch Pig Iron has declined to 55s. 6d. cash.

COPPER.—The price of English Raw is very irregular. Very low prices have been accepted for best selected and tough. Barra and Wallaroo are steady at about £83 10s.; Chili bars, £73, buyers in Liverpool.

TIN.—A very large business has been done, principally in Straits, from £86 10s. to £88 cash and prompt, and up to £89 for arrival. Banca has advanced to £91 cash, and £93 ex sale in Holland; the price has advanced to 54½fl. spot, and 55¼fl. ex sale. English firm at full prices.

TIN-PLATES are rather quieter.

LEAD is very quiet.

SPELTER.—More business has been done the last few days. Spot parcels realize £21 12s. 6d., which is also the nearest value for forward delivery. Specials in outports realize £2 15s.

VON DADELSZEN & NORTH.

SAN FRANCISCO STOCK MARKET.

Latest by Telegraph.—March 23.

Name.	Bid per foot.	Name.	Bid per foot.
Gould & Curry	500	Crown Point	910
Savage	2000	Yellow Jacket	825
Chollar-Potosi	260	Belcher	125
Ophir	250	Alpha	175
Hale and Norcross	3000	Imperial per share	225
Cal. Steam Navigation Co.	67½	Cal. State Telegraph Co	50

BOSTON STOCK MARKET.

(By Telegraph.)

BOSTON, March. 29, 1867.

Prices bid to-day were as follows:

Canada	50c	Minnesota	8
Copper Falls	23	Quincy	30
Franklin	20	Cary Improvement	9
Hancock	5¾	Rockland	..
Huron	7	Water Power	25⅞
Isle Royal	..	Central	..

Sales at Boston Stock Exchange, March, 27.

50 shs Water Power	25½	125 shs Peruvian	16½
50 do do	25⅝	10 do Pittsburgh	42
100 do Cary Imp	9½	300 do Rockland b.30	10
60 do Alonez M	6	50 do do	9¾
600 do Bay State	6⅛	100 do South Side	1¾
250 do Copper Fs	23	500 do Ophir Gold	2 30
100 do do b.30	24	SECOND CALL.	
5 do Franklin	22	100 do Huron b.60	13
100 do Hanover	1½	30 do Hancock	6¼
150 do do	1⅝	150 do do	6⅞
100 do Humboldt	1½	100 do Pewabic	16½
5 do Huron b.60	13	20 do Franklin	21
50 do do	13	100 do Rockland	10
75 do do	12½	50 do Water Power	26
25 do do	12		

Patent Claims.

Interesting to Miners, Millmen, Metallurgists, Oil-Men and Others.

The following claims have recently been issued from the United States Patent Office:

62,703.—MACHINE FOR POLISHING SHEET METALS.—Henry Todd (assignor to Bridgeport Brass Co.), Bridgeport, Conn.:

I claim the combination of the trough and presser B and C, with the rotating shaft E, arranged to draw the sheet through the scouring surfaces of the trough and presser substantially as specified, also in combination with the same, the removable sleeve e, and reversely rotating stars E and F, essentially as and for the purposes herein set forth.

62,706.—MANUFACTURE OF IRON AND STEEL.—Charles Usher, Iowa Falls, Iowa:

I claim the within described process for plating iron and steel, substantially as herein described.

62,749.—ORE CONCENTRATOR.—Morgan Hungerford, San Francisco, Cal.:

I claim, 1st, A pan cut in two and dropped about one inch, so that the lowest depression shall be two inches, more or less, below the ridge or angle of such concentration, substantially as described and for the purpose set forth.

2d. The slots or outlets, F, F, above the line of the groove around the inner rim, as described.

3d. The outer rim, G, with stops, H, H, also the discharge-bolts J, J, under the pan around the said outer rim, substantially as described and for the purpose set forth.

62,750.—CONSTRUCTION OF STILLS FOR OIL, ETC.—John Huntingdon, Cleveland, Ohio:

I claim the flues, E, J, and damper, M, or their equivalents, arranged in relation to an annular flue, K, surrounding the base of the still and operating conjointly in such a manner as to be combined with a single or double furnace, to diffuse a uniform heat without injury to the oil or burning of the still, and also to induce a current of cold air to reduce the heated oil and still as specified.

62,776.—MODE OF COLLECTING GOLD AND SILVER FROM SWEEPINGS, WASHINGS, ETC.—J. H. Rae, M.D., Syracuse, N. Y.:

I claim, 1st. The within described process of treating sweepings, filings or washings, containing gold or silver, by exposing the same to the combined action of a current of electricity and of suitable solvents or chemicals, substantially such as herein specified, or any others which will produce the same effect.

2d. Separating gold or silver from washings, filings or sweepings containing sand metals, by the action or aid of electricity, substantially as described.

3d. Using the bath, A, as an electrode and as an agitator, substantially as and for the purpose set forth.

62,795.—PUDDLING IRON.—Jacob G. Willans, Bayswater, England:

I claim the lining of that part of revolving or reciprocating puddling furnaces which is exposed to the friction of the iron in the charge while working with blocks or forms cut or shaped from the minerals above described.

62,798.—PREPARING PETROLEUM FOR LUBRICATING.—W. H. Young, Athens, Ohio:

I claim the cleansing of oil by means of an underlying body of heated water, substantially as described.

62,819.—MANUFACTURE OF IRON.—Anson G. Cook, Burlington, Vt.:

I claim, 1st. The rectifier or apparatus consisting of a chamber or vessel lined with fire-brick, provided with recesses, a, or their equivalents, substantially as described.

2d. The perforated cover, A', provided with the points or flanges for securing the lining of fire-clay, substantially as described.

3d. The process herein described of treating fused metal in a closed vessel or chamber containing charcoal, or its equivalent, substantially as described.

4th. The employment or use of the compound of oxide of manganese and coal-tar for the purpose of refining iron, substantially as described.

Special Scientific Brevities.

☞ M. E. Fremy, in a communication addressed to the French Academy, describes various methods for slowly precipitating certain chemical compounds which are amorphous, owing to the suddenness of their formation, thus enabling him to obtain them in a crystalline form. In some cases the bodies to be decomposed were introduced into liquids of different density, containing gum, sugar, gelatine, &c.; in others, they were placed in vessels of wood, or unglazed porcelain. He also had recourse to the Osmose process. Thus he succeeded in obtaining crystals of sulphate of baryta, carbonate of lead, sulphate of strontia, carbonate of baryta, borate of baryta, chromate of baryta, oxalate of lime, magnesia, and several sulphides. He did not, however, succeed in obtaining pure quartz by the reaction of alkaline silicates on certain acids.

☞ A glance at the *Journal de Fecamp* (the small watering place in Normandy) is repaid by the perusal of a fresh experiment in electrical research. One of the bathers, a Monsieur Duchemin, has found leisure for the arrangement of an apparatus by which an incessant current is produced from the inexhaustible ocean supply, so as to form an effectual motive power, capable, among other performances, of ringing bells to any extent of continuance. The process is extremely simple. A circular expanse of cork is set afloat as a buoy, over its surface is spread a zinc plate, while between both there is laid a layer of charcoal or carbon. A wire conducts the fluid (set free by this juxtaposition of materials) in an inland direction, to be there available as an impelling power, for purposes which may yet suggest themselves.

☞ A remarkable discovery has been made by Mr. Siemens, which demonstrates in a striking manner the convertability of dynamic into electrical force. A bar of soft iron, enveloped with copper wire, not transversely, but in the direction of its length, if inoculated in the slightest degree with magnetism, and then made to rotate rapidly, generates electricity to such a degree that wire is melted by the current, and effects are produced which have hitherto required the aid of an electro-magnet. The subject is to be brought before the Royal Society; and we hear that a similar discovery by Professor Wheatstone will be noticed at the same time.—*Athenæum.*

☞ Sponge may be bleached almost snow white by the repetition of the following process: Soak it in diluted muriatic acid ten or twelve hours, then wash it with water, and immerse it in a solution of hypo-sulphite of soda, to which a small quantity of diluted muriatic acid has been added. Wash and dry it.

☞ General Morin has just submitted to the French Academy an ingenious electric anemometer, which shows with great accuracy the state of ventilation in hospital wards, theatres, etc.

☞ Plants grown under the light of the electric lamp show that their green color is equally capable of being produced under the influence of such light as under that of the sun.

Mineral and other On-dits.

☞ A late English work on diamonds and other precious stones says that but a small portion of the gems sold and worn are genuine. The diamond mines of Golconda are giving out, and those of India are rapidly failing. The scarcity of real gems has been met by the ingenuity of counterfeiters, who manufacture spurious gems that frequently deceive expert connoisseurs. Large quantities of false gems are made in Birmingham and Paris, and shipped East, where the Orientals sell them to credulous European travelers as the real article. Nine-tenths of the diamonds now flaunted are mere paste ornaments for which their wearers have given large sums.

☞ The quantities of refined oil removed from the refineries of Pittsburgh for the fiscal year ending June 30, 1865, was 142,233 barrels; and for the one ending June 30, 1866, 354,907 barrels. The amount bonded during the two years was 409,992 barrels, out of a total of 488,140 barrels. For the two years there were collected taxes on refined oil amounting to $625,189.27.

☞ The demand for petroleum in Europe alone for the year 1866 is estimated at 90,000,000 gallons. The consumption in 1864 was 30,000,000, against 10,000,000 gallons in 1862. There is also a brisk demand for it in every country in the world that has learned the value of artificial light, and of machinery.

☞ An exchange states: "Mr. J. G. Sanders, Secretary of the Whitlatch Union mines, shipped east, per last coach, two "bricks," of the respective weight of 230 ounces, 10 grains; and 83 ounces, 3 pennyweights, 10 grains. At $18 per ounce, this would give $5,727 45, and the premium on gold would make it $7,616 40 in current funds.

☞ The Belgians claim to have been the first to discover the uses of coal, and this discovery, they say, was made by one Hullos, a blacksmith of the village of Flenevaux, near Liege, in the year 1049, from whose name they derive the word "houille."

☞ Professor Knop, of Leipsig, while searching for crystallized specimens of crysolite, has found a new mineral, to which, from its appearance, he has given the name pachnolite, from a Greek word, meaning "frost."

☞ A correspondent of the Cincinnati *Gazette* reports that a Mr. Disman, of Upper Sandusky, Ohio, has discovered a process of hardening copper, an art which has been lost for nearly three thousand years.

☞ It is said that a plan is in contemplation to supply Buffalo from natural gas wells at Amherst, ten miles distant. A well now sunk flows 40,000 feet of pure gas every day, and five more are proposed.

☞ The finest steam coal in the world is found near Pekin (China), where there is a coal-field of 200 square miles in extent.

All Sorts.

☞ In the twentieth year of Queen Elizabeth's reign, a blacksmith of London, named Mark Scaliot, made a lock of iron, steel and brass, of eleven pieces, and a pipe key, all of which only weighed one grain. Scaliot also made a chain of gold, of forty-three links, which he fastened to the lock and key, and put it around the neck of a flea, which drew the whole with perfect ease. The chain, key, lock, and flea, altogether, weighed but one grain and a half!

☞ While the Woman's Rights Convention was in session at Albany a horse-car was crowded. There entered a severe-looking female. An old gent rose to give her a seat. "Be you one of those women-righters?" he asked. "I be," replied the ancient. "You believe a woman should have all the rights of a man, do you?" he inquired. "Yes, I do," was the emphatic answer. "Then," said the man, "stand up and enjoy them like a man;" and she had to stand up.

☞ One of the most extensive farms in the world is that of Gen. Urquiza, of Buenos Ayres. It is about 300 square leagues in extent, on which there are grazing almost incalculable numbers of horses, beasts, and sheep. This farm sends 50,000 head of cattle annually to be slaughtered. The horses would be sufficient to mount the cavalry of a large army, and a good many ships are annually laden with the wool of the sheep, for Europe.

☞ A testator who evidently intended to thwart his relations and be a benefactor to the lawyers, gave to certain persons "as many acres of land as shall be found equal to the area inclosed by the centre of oscillation of the earth in a revolution round the sun, supposing the mean distance of the sun 21,600 semi-diameters of the earth from it."

☞ A Cincinnatian says: "Talk about filters! Just eat a quart of Ohio river water, and stand in the sun for five minutes, and you will find the aforesaid coming out at every pore, beautifully filtered, while your stomach becomes converted into a sand-bag, and you can hear the gravel rattle as you walk."

☞ Bacon left a will appointing six executors, but no property except his name and memory, which he bequeathed to "men's charitable speeches, to foreign nations, and the next age."

☞ In England there are 24,000 policemen and constables. Of these about 7,500 are in London, about 6,600 in boroughs, and the remainder in the agricultural districts.

☞ "Now then, my hearties," said a gallant captain, "you have a tough battle before you. Fight like heroes till your powder's gone; then—run! I'm a little lame, and I'll start now."

☞ A surgical journal speaks of a man who lived five years with a ball in his head. Job Squires says he has known ladies to live twice as long with nothing but balls in their heads.

Improvements in Sinking Apparatus.

Letters patent have been granted to Mr. John Dickinson Brunton, of Kentish Town, Civil Engineer, for "improvements in machinery or apparatus for sinking shafts or pits and driving tunnels and galleries," which he thus describes: "This invention consists of an arrangement whereby a cutter, or as I prefer, three or more cutters, of steel or other suitable material and of circular form, is or are caused to revolve round an axis (which I distinguish as the planetary axis) parallel or nearly so to the axis (which I distinguish as the central axis) of the pit, tunnel, or gallery to be formed, and as they revolve, to cut away the rock or other strata against which they are made to act. While the cutter or cutters revolve round the planetary axis (and this I call their planetary motion) the axis itself is caused to move either in a circle concentric with the central axis of the pit, tunnel, or gallery, in which case the excavation or perforation will be of a circular or cylindrical form; or to move in any other figure round the central axis, by which a corresponding form will be given to the pit, tunnel, or gallery. The motion of the planetary axis with its accompanying cutters round the central axis I call the orbital motion. By the combined orbital and planetary motions, together with another spiral motion, which, in the case of a pit, is downward upon the bottom, and in the case of a tunnel or gallery is forward against the end, the cutters, as they revolve, cut the face of the rock into a spiral form, having a pitch or angle of progress dependent in some degree on the nature of the rock or stratification operated on. The cutters are circular discs of steel or other suitable substance, and of a diameter proportioned to the size of the machine, having the whole circumference of their periphery formed into a cutting edge, and are placed at right angles to their planes upon pivots or journals, on which they can freely rotate. The cutters, formed as described, with their journals, are fitted into proper bearings carried upon arms keyed upon or attached to a shaft, the axis of which coincides with the planetary axis, and which shaft, together with its arms and cutters, is caused to revolve by means of toothed gear, or in any other convenient manner. Every disc, when in its place in the arms, is inclined towards the shaft at such an angle as may be found best suited to the nature of the rock or ground being wrought upon, and so that that part of the disk which, for the moment, is cutting shall be more distant from the shaft than the opposite part of the circumference. The plane of every disc is also at right angles, not to a radial line passing through the planetary axis and the centre of its point. The cutters act upon the rock during about one-half of their planetary revolution, and the radius of the circle described by the edge of the cutters in their action upon the rock should be about one-half of the radius of any cylindrical pit, tunnel or gallery, to be formed, so that in every orbital revolution the cutters shall pass over and cut from the entire or almost the entire face of the bottom or end. In the case of hard rock I prefer to have two or more cutters parallel and concentric with each other upon the same arm. I bring a whetstone, or grindstone, or other suitable sharpening substance either constantly or occasionally into contact with the periphery of the discs as they rotate, so that a cutting edge of sufficient sharpness shall be maintained or renewed. The planetary shaft with its arms, cutters, driving gear, and other parts, I fix in a strong frame, to which I impart a spiral motion round the central axis of such a speed as will carry forward the cutters at a proper rate of progress in their orbital path against the portion of rock to be cut away, and of such a figure as will produce the desired form of pit, tunnel, or gallery. Upon this planetary frame I also place a cylinder or cylinders with usual parts and connections, to which I supply either steam or compressed air, and from which I give motion to the entire machinery by cranks or in any other convenient manner. The structure of the entire frame will be regulated by the form of pit, tunnel, or gallery to be made, but it will include provisions for the orbital and spiral progress of the planetary frame with its mechanism. The whole apparatus will occupy but a part, probably not more than one-half, of the bottom of the pit or the end of the tunnel or gallery being formed, and will therefore, without any cessation of its working, allow of constant access for the removal of the debris produced, and for attendance upon the machine. If required, pumps also for the removal of water, can be carried down coincidently with the progress of the work."—*Colliery Guardian.*

Gravel and Cement Mining.

We are indebted to Mr. H. L. Hopkins, a mill builder and inventor in California, for interesting information, illustrated with rich specimens, of both the

original wealth and full half as wealthy waste of the comparatively new class of workings known as "gravel" and "cement" claims. Their extent is yet unknown, but our informant believes, contrary to the general opinion, that it will prove to be general in all parts of the State.

These deposits are believed to be the beds of ancient rivers, lying now hundreds of feet below the surface of the ground. They are worked by tunnels and drifts at the bottom of the bed, simply washing out the lowest settlings of gold, and leaving the vast and valuable mass above, the bed rock which is very rich in gold, the abundant sulphurets, rich in gold, which no satisfactory process can rescue as yet, numerous fragments of rich quartz, and a great deal of the less soluble cement or conglomerate, as "tailings," from which fully as much gold can be extracted as had been taken out by the first crude process. Yet in this imperfect manner $2,000,000 in gold have been taken out of a single claim, and over $800,000 from another, not a tithe of which has been worked. Eight distinct river beds, each forty or fifty feet wide, have been crossed nearly at right angles in working the latter claim, and the dirt lying close on the bed rock of the river channels is always amazingly rich. Drifts following these obsolete water courses to right and left, must be excessively profitable.

The washing is done about once in two months, or as often as the boarded pits used for the purpose are filled with the gravel and cement, and the latter sufficiently integrated by the action of the elements. In the first place, it is so solid as to require blasting. To illustrate the waste of the usual method, it is related that an Irishman employed by a certain company received as a gift a pile of "tailings" to keep him busy during a slack season. By careful re-washing, he obtained $26,000 in gold, and still another washing yielded him $15,000, after which he sold the Fortunatus' earth for $6,000 to a party who obtained $12,000 more from it. We have not heard whether it is producing still or no. Mills are now beginning to multiply in connection with the gravel or cement claims, and it is confidently believed that their product can be doubled by this measure.—*Scientific American.*

Special Notices.

Player's Improved Hot Blast Stove.

Our readers will recollect that we recently illustrated in the AMERICAN JOURNAL OF MINING the above useful invention, in relation to which, Mr. James Henderson, of 218 Fulton street, this city, has received the following testimonial, which gives some additional facts concerning its working, etc., which will undoubtedly interest iron smelters and others:

TERRYHILL BLAST FURNACES,
CLEAVELAND (England), Jan. 31, 1867.

MR. PLAYER—Dear Sir: In reply to your request to have a testimonial from me respecting the working of your Patent Stoves at these works, it gives me pleasure to state that the four stoves erected at our large blast furnaces, which have been at work these three months, are giving most satisfactory results. I can safely recommend them as the best stoves ever at work, for the uniformity of heat and high temperature they generate, without danger of burning the pipes. At one of our small furnaces, 80 feet high, we have only two of your stoves to heat the blast for three four-inch tuyers; the heat of the blast is 1000. On the whole I consider your Patent Stoves the best I have yet seen.

Yours truly, J. THOMAS,
Resident manager of Rosedale and Terryhill Iron Company.

Since writing the above the Company have ordered of Mr. Player twenty more of his Patent Stoves.

The Ericsson Caloric Engine and Pump.

We refer our readers to an advertisement of the Caloric Engine and Pump, of J. A. Robinson, 164 Duane street, N. Y., which appears in another column. From the testimonial therein contained, it will be seen that the Caloric Engine is worked at very little cost, with perfect safety, and requiring no mechanical skill to direct it. We shall illustrate his engine next week, when we shall speak more t length of its principle and advantages.

MORTON'S PENS.—We have examined a great many testimonials, all speaking in high terms of Morton's pens. Editors appear to be particularly well disposed towards them, for instance: The *vening Post* has always found them the best instruments of the kind that have fallen in its way; the *N. Y. Times* heartily recommends them, and the *N. Y. Tribune knows* them to be the best made. With pleasure we endorse these expressions, having had practical experience of the value of the "Morton Pen."

PRESS NOTICES.

[*From the Portsmouth (N. H.) Chronicle, March* 23.]

In consequence of the success of the AMERICAN JOURNAL OF MINING, it will be enlarged to twenty pages with the number for the week ending March 30, when it begins its third volume. It furnishes a great deal of information, valuable in a country with such mineral wealth as our land can boast. Four dollars a year. Western & Co., publishers, 37 Park Row, New York.

[*From the Boston Commercial Bulletin, March* 23.]

The AMERICAN JOURNAL OF MINING, an able and enterprising organ of the mining interests of this country, published at 37 Park Row, New York City, is about to be enlarged. In its now form it will present twenty pages of valuable and interesting matter relating to mines and mining.

[*From the Pottsville Standard, March* 23.]

We invite attention to the prospectus of the AMERICAN JOURNAL OF MINING in our advertising columns. This is the most complete and reliable publication of its kind in the country, and we commend it to the attention of all interested in mines or mining.

[*From the Pottsville Miners' Journal, March* 23.]

AMERICAN JOURNAL OF MINING.—In consequence of the success of the AMERICAN JOURNAL OF MINING, Messrs. Western & Company, the publishers, will, on the 30th instant, enlarge it to twenty pages, thus making it one of the largest and most comprehensive mining journals in the country. Our contemporary is most carefully and ably conducted, and is fully worthy of the success which it has met.

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The business of the firm will be settled by Jno. White, at No. 8 Wall street, New York City.

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The undersigned beg leave to announce that they have this day formed a copartnership under the style of JOHN WHITE & CO., for the purpose of conducting a General Wholesale Coal Business, at No. 8 Wall street.

JOHN WHITE,
LOUIS T. SNOW,
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New York, March 1st, 1867. 25-2.px

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[From the Scientific American.]

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[From Hillyer's U. S. Mining Journal and Petroleum Recorder.]

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MISCELLANEOUS.

TO INVENTORS AND OTHERS.—Notice is hereby given that the members of a Commission, acting under the authority of the Secretary of the Treasury, will meet in the City of New York at the Office of the Supervising Inspector of Steamboats, No. 23 Pine street, on the SECOND MONDAY in April proximo, for the purpose of examining and testing the merits of such inventions of a life-saving character as may be brought before them.

Said Inventions will embrace Boilers of Steam engines, Anti-incrustators, Safety-valves, Steam gauges, Water-gauges, Steering Apparatus, &c., &c., &c.

Inventors may appear in person before the Commission, for the purpose of explaining their Inventions; but no expenses will be allowed under any circumstances. H. MCCULLOCH,

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WASHINGTON, D. C., March 13, 1867. 26:2t

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He refers to the Hon. Stephen J. Field, Associate Justice of the Supreme Court of the United States.

Jan. 1, 1867. 18:12:ap

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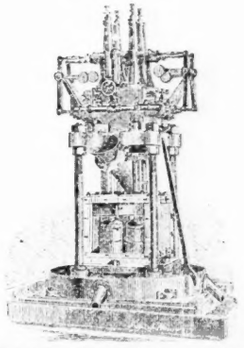

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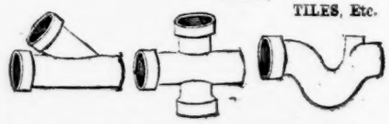

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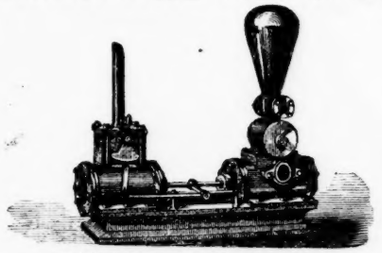

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" 1	4 "	2 "	180	20	5	200 00
" 2	5 "	2½ "	160	40	6	275 00
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" 4	9 "	5 "	110	150	8	525 00
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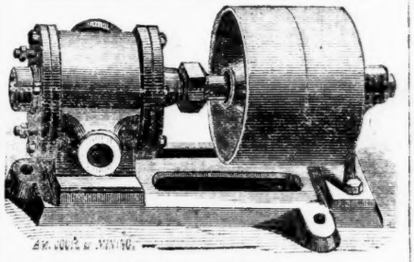

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Respectively which, in the opinion of the Committee appointed for that purpose, shall be most suitable to the requirements of the trade, and the inventor of which shall comply with the regulations laid down by the Committee.

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MASKELL WM. PEACE,
Wigan, Law Clerk to the Association.
Feb. 11, 1867 25:2:tf

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STEAM PUMPS.

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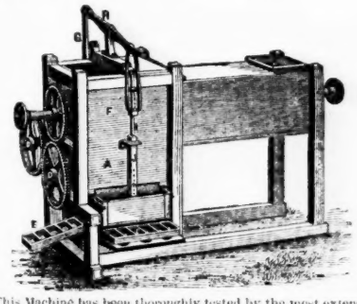

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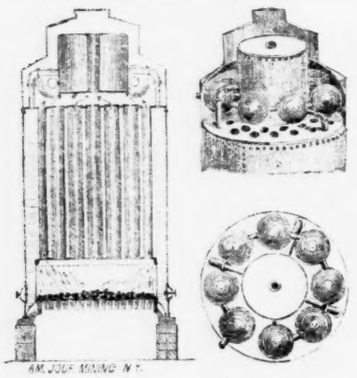

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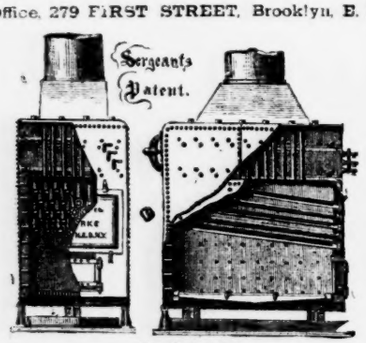

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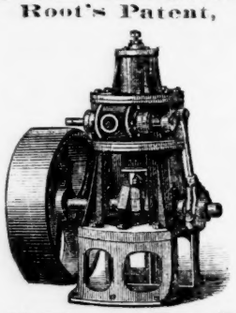

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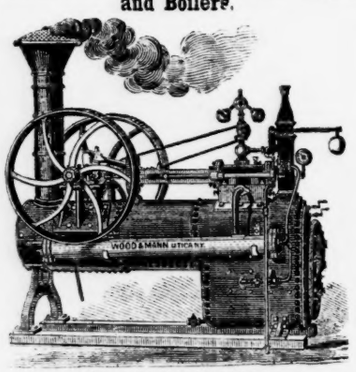

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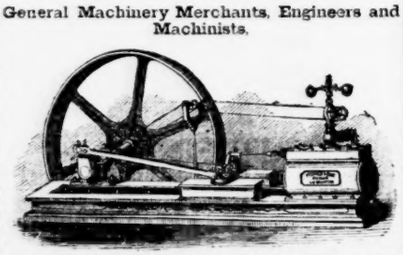

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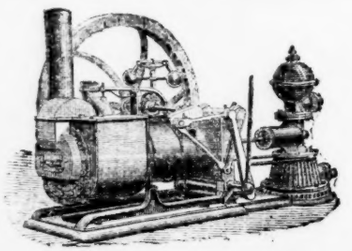

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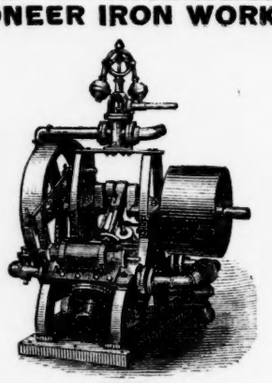

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